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# THE PSYCHIATRIC QUARTERLY

- Psychiatric Classification in the  
Study of the Oral (Orbicularis  
Situational Schizophrenia  
Acute Heterosexual Insanity  
Reliability of Rorschach Method  
Clinical Observations in Hypoglycemia  
Experiences in Patients Incubated  
Metrazol Therapy  
Insulin Treatment Upon Schizophrenia  
Frequency of Relapses in Patients Treated  
Hypoglycemic Shock  
Psychographic Studies of Patients Treated  
Metrazol in the Treatment of  
Convulsions in Schizophrenia  
Psychological Performance Tests as Prognostic  
Value of Insulin Therapy in Schizophrenia  
Effect of Large Doses Sodium Amytal in Psychomotor  
Ketone in Male Involutional  
Organic Acids in Schizophrenia and  
Tuberculosis in the Human  
Water Intoxication in a Schizophrenic  
Insomnia in Obsessive Ruminations

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# THE PSYCHIATRIC QUARTERLY

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## PSYCHIATRIC CLASSIFICATION IN A PRISON

BY ARTHUR N. FOXE, M. D.,  
GREAT MEADOW PRISON, COMSTOCK, N. Y.

### PART I. DEFECTS IN THE AMERICAN PRISON ASSOCIATION

#### CLASSIFICATION

Great Meadow Prison, the source of this work, is one of the State prisons in New York. It is a maximum security prison with a population of over eleven hundred inmates and a turnover of from 350 to 500 a year. All types of felons are incarcerated therein. It is not primarily a receiving prison although many are originally classified at Great Meadow due to the general overcrowding of receiving prisons. Further, an active classification clinic at Great Meadow reclassifies all incoming men for special facilities and rehabilitation possibilities inherent in the institution.

In New York State the American Prison Association classification has been in use for some years. In this paper we are concerned solely with psychiatric and not administrative classification. The present study is based on 3,400 consecutively examined classifications of men at Great Meadow Prison. These classifications were made by clinics at the various prisons, including Great Meadow, and more or less reveal the psychiatric approaches of some ten or more full-time State psychiatrists during the past 10 years.

The following is the American Prison Association classification:

- A. Normal
- B. Feeble-minded
- C. Neuropathic (not insane but subject to mental abnormalities)
  - (a) Psychopathic personality
  - (b) Epileptic
  - (c) Postencephalitic personality
  - (d) Alcoholic
  - (e) Drug addict
  - (f) Psychoneurotic

(g) Other brain or nervous abnormalities without psychosis—to be specified

D. Psychotic

E. Potentially psychotic

(a) Recovered from psychosis

(b) Psychosis in remission

(c) Physical symptoms of incipient psychosis

After a number of years of study it is obvious that the above classification is seriously wanting in many respects. This has led to indifference on the part of some psychiatrists and a rather nihilistic attitude on the part of others. The former classify in a rather mechanical way, the latter wish to discard classification entirely. It seems to me that neither of these two attitudes is at all helpful and that the problem requires more careful study to find and remedy defects, if possible.

Under group A, "normal," are included all those who cannot otherwise be classified after careful study. There could be no more erroneous or unscientific way to classify than this. It is small wonder that some psychiatrists dislike the classification scheme. A criminal may have a long record which may include crimes that violently arouse public opinion and yet upon careful study—at least as careful as one can give with a large prison case load—one can find nothing apart from the criminal record to prove anything but normality. If one decides to place a man in one of the above groups merely because of a criminal record there is no psychiatry involved. On the other hand, if one places such an individual in a group called normal, one is subject to the scorn of judges and all lay bodies that very well know that the man certainly is not normal. Common evasions of the problem are to call the man normal and then to add saving phrases such as egocentric—unstable—inadequate, and the like. I do not berate this method entirely for there is some justification for it at times. All psychiatrists, including the writer, have done so. I am trying to show how a useful addition may become a defense. Another method is to abandon the classification of normal and say "not demonstrably abnormal," or, "not psychotic nor mentally defective." These are patent eva-

sions, but here too we must not condemn but try to find a solution to a vexing problem. Unless psychiatrists in prisons do this, they partially merit the lay criticism they often get. The problem must be faced courageously.

The number of truly normal men in prison is small. Society in ordinary times strongly condemns aggressive criminal outbursts; that society sanctions it in times of war and on other occasions does not alter the problem at all. Society also condemns thefts; that society varies its definitions of theft from time to time does not alter the problem either. Society alone determines what crime is. We may have our own ideas in the matter but the therapeutic and administrative problem exists none the less and must be solved in the best possible way. We can conceivably label a man normal only when the circumstances of his crime are such that the vast majority of people in the identical situation would have done the same. I speak here of the immediate situation. I am not referring to the man's background or upbringing, all-important as they may be. Society expects a man to surmount his background. This as we know may be impossible. But again, moralizing and speculating have nothing to do with the immediate problem. A normal man maintains his acceptable adjustment even under fairly trying circumstances. This can be said of very few prison inmates. The classification normal should rarely be used. But what is one supposed to do where a man shows none of the customary symptoms of any mental disease? This is a trying problem. There is only one solution. Just as the psychiatrist studies mental symptoms as evidences of mental disease, so he must study criminal manifestations as evidence of criminality or criminosis. If he be of the descriptive ilk he may simply describe these forms. If he belong to one of the dynamic schools he may in his own way investigate the dynamics of these forms along gestalt, behavioristic, psychobiological, psychoanalytic, or other methods. The first step in this direction lies in the classification of criminals according to criminal behavior.\* Such a classification would not displace but be an adjunct to the psychiatric classification.

\*For an effort in this direction see a forthcoming paper in the *Journal of Criminal Law and Criminology*—"An Additional Classification of Criminals."



If few men in prison may be called normal how is one to classify those who fit no pigeonhole in the psychiatric classification? We must admit facts and not call these men normal. We must admit that they have no mental disease according to accepted psychiatric standards. A new heading must be made in the psychiatric classification and it must be called "no mental disease," it being understood there is no mental disease picture into which the man fits. One may claim that even criminal behavior has a large mental component but we must also admit that society may never accept this interpretation and until society does so we had better adopt a more practical and scientific approach rather than befog the courts and ourselves, for that matter, with such paradoxical catchbags as "normal." In the courts, we may say this man has no evidence of mental disease but upon questioning we may say he shows evidences of criminality or criminosis. It is for society to decide how it wishes to deal with these manifestations of behavior. As individuals, however, we may cooperate with groups favoring study and treatment with whatever scientific means are available rather than make the criminal the object of scapegoat sacrifice or public indignation. It is difficult to be a scientist and crusader at the same time.

It need not be remarked that a large part of the inmate population would come under the heading of "no mental disease" with the classification in its present form.

With the conventional group B, "feeble-minded," there is no need for alteration. In this paper no attempt will be made to examine the possible organic or psychogenic origins of feeble-mindedness, nor will any attempt be made to go into the varying degrees of feeble-mindedness and their practical application. Here the possibility comes to mind, of dividing the feeble-minded into two groups, the committable and the noncommittable.

Group C (a) "psychopathic personality" is another useful grouping that may well be retained. In looking at a report one would not expect to find exactly what a psychopathic personality is, but after seeing a man so classified one would have a picture of him as a very definite psychopath of one of many possible types—not so marked as to be psychotic or potentially psychotic and yet suffi-



ciently marked to preclude the possibility of saying he has no mental disease. Group C (b) "epileptic," is obvious enough although it has been my experience that there are few epileptics in prison. Perhaps epilepsy, like so much other mental disease, is really a form of criminal behavior lived out on oneself. With the criminal, however, we may have a sort of inverted mental disease where it is played out in society. Incidentally this is another strong reason for separate criminal classification. We could also very well retain the rare classification C (c) "postencephalitic personality," although its direct relation to certain types of criminality is very much in question. Group C (d) "alcoholic," is a very useful designation in that it gives a graphic picture of an individual from a descriptive point of view. The same may be said of C (e) "drug addict," although it usually is difficult to detect drug addicts. Many automatically give up the use of drugs as others give up the use of alcohol while in prison. Although the alcoholic is relatively willing to acknowledge his alcoholism, the drug addict, for obvious reasons, keeps his habit a secret.

C (f) "psychoneurotic," is another valuable grouping in a descriptive sense. The American Prison Association's classification scheme would like to include here purely psychogenic cases. This of course is phantastic. It pays lip service only to psychology. We do not yet know how much of criminal behavior is purely psychogenic. It may be large, it may be small. Only the researches of psychology or the eventual researches of biology will tell us. Empirically at the present time this group is used for those inmates who have neurotic symptoms. It might be useful to distinguish those whose symptoms are present only in prison or both in prison and outside of prison. Group C (g) "other brain or nervous abnormalities without psychosis—to be specified," might well be retained but to this should be added the endocrinopathies.

Group D "psychotic," is essentially useless in prison work. Psychotic inmates in New York State are transferred to a hospital for the insane or recover so quickly as to be potentially psychotic rather than psychotic. Group E "potentially psychotic," is a useful designation. It conveys a vivid picture of many possible forms of what a man is, has been or very likely will be.

## PART II. MODIFICATIONS OF THE PSYCHIATRIC CLASSIFICATION

A modification is an addition to the standard classification. Thus instead of merely saying a man is normal one says he is normal, but egocentric and unstable. The reasons for modifying classifications are as follows: 1. As I have already indicated it is at times of practical value but it may become a defense or may be carried to extremes. 2. Occasionally one is at a loss as to whether to place a man in one group or another. He may be classified, for instance, as "normal, alcoholic tendencies." 3. Different psychological schools have studied various character formations from various angles and have different terminologies. Thus one may find such classifications as the following, "psychopathic personality, inadequate type;" "normal, introvert;" "psychopathic personality, constitutional inferior." 4. A modification may be used in an effort to bring the classification scheme to some extent within the domain of more recent discovery. Thus the developmental angle may lead to the classification "normal, immature." 5. At times the very weakness of the classification by itself without an additional criminal classification is shown, when we find such designations as "normal, antisocial," or "normal, chronic burglar." Such hybrid designations however, are only makeshifts and we may as well go the whole way with an additional classification. 6. At rare times a justifiable doubt may lead to an acceptable modification such as "normal, tentative." In this however there must be some balance and reserve and not a defense. 7. Some modifications at times seem to be mistakes, such as "normal, sex pervert." 8. Sometimes modifications are made when they should not be part of the classification at all, although perhaps part of a psychiatric report or administrative report. As examples are the following: "normal, warrants," "normal, rule out lues." It doesn't take long to rule out lues. Why not rule it out and then change the classification if necessary? 9. At times modifications arise through obvious defects in the classification scheme and suggest certain necessary and valuable changes. Such are the classifications, "normal, sex pervert," and "normal, nomad." Homosexual practices are common in prison. Some cases, however, show frank and outspoken homosexuality. Is it not possible that we should add a character group

to our psychiatric scheme? As a matter of fact recently I noticed a very small group of cases classified simply as "neurotic character or "neurotic makeup." 10. Modifications are sometimes made when there are two separate and important factors in the classification scheme. As an example, "potentially psychotic and drugs." 11. Finally, modifications may really be subheadings in the classification scheme.

Following is a list of modifications that I have found added to classifications. Some are invaluable and a few are errors. I do not criticize my colleagues. Some of the errors are my own. Of the 3,400 examined, 161 were complete deviations from the classification scheme, mostly "not demonstrably abnormal" or "not psychotic or mentally defective." Nine hundred and seventy-eight classifications were modified and in all there were 1,178 modifications. This difference in figures is due to the fact that many classifications were modified twice. Thus the following classifications were extremely common: "normal, dull, unstable" and "normal, egocentric, unstable." Although 978 is less than one-third of the total, the problem looms large because the tendency every day is to depart further from the standard classification.

#### LIST OF PSYCHIATRIC MODIFICATIONS

Classifications over a 10-year period .....	3,400		
Number modified .....	978		
Modifications in all .....	1,178		
Full deviations from the classification of the American Prison Association .....	161		
Classifications adhering exactly to the original classification scheme not considered in this paper .....	2,261		
Unstable .....	320	Hypomanic	
Emotionally unstable .....	25	Manic makeup	
Some emotional tendencies		Hypomanic personality	21
Evidences of emotional instability	4	Hypomanic type	
Some instability		Hypomanic tendencies	
Episodes of emotional instability		Extrovert .....	1
Hypochondriacal .....	2	Schizoid type	
Depressed		Schizoid makeup	
Episodes of depression	4	Schizoid features	20
Some depression		? Schizoid	
Manic-depressive type .....	1	Schizoid tendencies	
		Schizoid psychopath	

Introvert			Cerebral arteriosclerosis		
Introvert type	5		Arteriosclerosis	6	
Simple dementia præcox	1		Presenile	1	
Paranoid condition	2		Senile	1	
Paranoid tendencies			Chronically ill	1	
Paranoid ?	4		Invalid company	1	
Paranoid trend			Rule out tuberculosis	1	
Persecutory trend			Glandular disturbances		
Litigious type	1		Endocrine	3	
Egocentric			Endocrine ?		
Egocentric type	112		Stutters	1	
Borders on psychopathic person- ality	1		Stammers	3	
Potentially psychotic	1		Traumatic neurosis	1	
With psychotic features	1		Neurotic tendencies		
Psychopathic makeup	1		Neurotic		
Psychopathic	1		Neurotic makeup		
Recovered	2		Psychoneurotic features	33	
Consider neuropathic alcoholic			Neurosis		
Chronic alcoholism			Psychoneurosis		
Alcoholism			Psychoneurotic		
Alcoholic ?			Dull	193	
Alcoholic	92		Low intelligence		
Episodes of drinking			Inferior intelligence	18	
Episodes of alcoholism			High grade	1	
Possibly alcoholic			Borderline		
Alcoholic tendencies			Borderline defective	89	
Possibly drugs			Borderline intelligence		
? Narcotics	3		Low mentality	1	
? Drugs			Feeble-minded	1	
Marihuana	1		With feeble-mindedness	1	
Drugs	1		Bright	6	
And drugs	1		Immature	31	
? Epilepsy			Adolescent	5	
Exclude epilepsy			Inadequate		
Rule out epilepsy	12		Inadequate type		
Possibly epilepsy			Inadequate personality	55	
Early syphilis			Socially inadequate		
Lues			Constitutional inferior		
Physical signs of C. N. S. lues			Psychopathic inferior		
Rule out lues			constitution	5	
C. N. S. lues			Inferior constitution		
Neurosyphilis	32		Impulsive	2	
? Syphilis			Homosexual		
Evidence of C. N. S. lues			Invert		
Signs of C. N. S. lues			Sex pervert	16	
Rule out C. N. S. lues			Sex		
Meningovascular syphilis			One arrest indecent exposure	1	
			Primitive makeup	1	

Assaultive .....	1	Tentative .....	4
Pathological liar .....	1	Warrants .....	1
Nomadic } .....	3	Undetermined .....	2
Nomad } .....		<i>Complete Deviations from Classification</i>	
Antisocial .....	12	Not demonstrably abnormal .....	10
Chronic thief .....	1	Not psychotic or mentally defec-	
Chronic offender .....	1	tive .....	149
Chronic burglar .....	1	Neurotic character .....	2
Gangster type .....	1		

Now let us examine these modifications and separate the chaff from the wheat. I shall not repeat statements or suggestions already made above. Is it possible to eliminate a large number of these modifications by setting up, as mentioned before, a separate character group? This, in line with recent advances in psychiatry and psychology, perhaps would take many cases out of the more vague psychopathic personality group. Included in the author's proposed psychiatric classification on page -627- is a list of types that might very well be placed in a "character group." Perhaps time alone will tell how much value and validity they have. It is an empirical effort. It attempts to apply the discoveries of varying schools and thus must be eclectic.

In the main, the designations are descriptive and a beginning. We still have much to learn about these problems. Many youths whom we now would have to designate as "normal, unstable," show instability merely as part of their youth. They are really immature characters. Some older individuals remain eternally like children and they also would be designated immature characters. Egocentricity also is one of the characteristics of youth. We might say the same of mild alcoholic tendencies in youth. Thus much of the need for haphazard modifications is done away with and a new, tentative approach is opened in line with modern investigation. Most of the terms are not only descriptive but largely self-explanatory. They should be used only when they most accurately portray the man's salient characteristics. Inadequate character is a term I have not personally used. It seemingly describes those who are easily led, whose ego is inadequate to social demands, whose instinctual drives would be controlled in one of average superego development. It is admittedly an as yet vague concept. Depressive



character might include certain hypochondriacal and depressed types. Litigious characters would not have reached any proximity to litigious paranoia, yet they are something of a problem in prison. The paranoid characters are too often "innocent" victims in prison fights. Some men do convey about them largely the attitude of the jungle—plain, simple, ready to fight, playful. These might be classed as primitive characters. Criminally gregarious character refers to that type who finds himself drawn to groups of men. He is hardly definable away from his gang. He is the opposite of the nomad who pursues his solitary way. At times one sees an individual in prison whose whole bent in life is a tirade and activity against society, what might be called the antisocial character.

With these suggested changes in the system of psychiatric classification one already sees that the psychiatrist may give new help to and no longer need be embarrassed by the court or layman. He may rightly and without hypocrisy advance his methods and scope and he may disentangle himself from awkward hypocrisies and defenses. But he must be more on the alert and study each inmate with greater perspicacity to find his proper designation.

Now let us further examine the modifications in a few details. Under "normal," which now becomes an infrequent designation there is very little need for modifications. "Unstable," "egocentric," "alcoholic tendencies" need rarely be used. "Dull," "borderline" or "low intelligence" should be discarded unless the defect is marked enough to be striking and yet not marked enough for commitment to an institution for the feeble-minded. The type indicated would better be placed in a separate "borderline defective" group. It seems necessary to standardize some of the modifications. Administrative details should be left for the administrative classification. There is no logic, for example, in adding "warrants" or "invalid company" to a psychiatric classification.

### PART III. PROPOSED PSYCHIATRIC CLASSIFICATION

A—Normal

B—Feeble-minded

(a) I. Q. to —

(b) I. Q. — and above

## C—Neuropathic (not insane but subject to mental abnormalities)

- (a) Psychopathic personality
- (b) Epileptic
- (c) Postencephalitic personality
- (d) Alcoholic
- (e) Drug addict
- (f) Neurotic (includes traumatic neurosis)
- (g) Other brain, nervous or endocrine abnormalities without psychosis—to be specified

## D—Character group

- (a) Immature character (includes adolescent character and psychosexual immaturity)
- (b) Inadequate character (includes ego inferior or constitutional inferior types)
- (c) Hypomanic character (extrovert)
- (d) Schizoid character (introvert)
- (e) Pervert character (homosexually active or perversions)
- (f) Nomadic character
- (g) Depressive character (hypochondriacal)
- (h) Litigious character
- (i) Paranoid character
- (j) Primitive character
- (k) Impulsive character
- (l) Pathological liar
- (m) Criminally gregarious character (outspoken "ganster")
- (n) Antisocial character

## E—Potentially psychotic

- (a) Recovered from psychosis
- (b) Psychosis in remission
- (c) Physical symptoms of incipient psychosis

## F—No mental disease

#### PART IV. CORRECTED MODIFICATIONS AND TERMS (Where Term Has Varied)

- (a) Wherever there is doubt use the term "Possibly"
- (b) Do not use:
  - (1) Question marks to indicate doubt
  - (2) The following terms: question, evidences of, some, episodes of, type, features, personality (except with psychopathic personality), makeup signs, physical signs, exclude, borders on, consider, changes, dull, low, high grade, inferior, chronic, socially, character (unless one of character types in classification scheme), homosexual, invert, sex, sex pervert, trend, disturbances, etc.

- (c) Use term alcoholic tendencies
- (d) Use term borderline as a modification consistently. Use term intelligence but not the terms defective or mentality
- (e) Use term unstable. Do not use term instability
- (f) Use term neurosyphilis. Do not use lues or C. N. S.
- (g) Use term cerebral arteriosclerosis
- (h) Use term neurotic and do not use term psychoneurotic
- (i) Do not use such terms as not demonstrably abnormal, or, not psychotic or mentally defective
- (j) Do not bring administrative material or material on crime into the psychiatric classification unless identical as in the case of a pervert character charged with sodomy and then merely say pervert character
- (k) Leave more elaborate descriptions for psychiatric report proper.

As a closing word let me say that the classification as revised carries on the empirical method and in years to come will require additional changes with new knowledge. Certainly the present classification has outworn its usefulness. It is time to map out new fields of study and classification and to trim off multiplicity of designation where the practical value of the multiplicity is small compared to the need for whole consistency. As psychiatrists working with practical problems we must put much of our varied material into the psychiatric report proper and keep the classifications themselves terse and uniform. We must be alert to the fact that a large body of nonprofessional individuals uses the material that we arrange and so acceptable but practical designations must be used. Further, these must have some consistency so that we all speak with a more or less common language. We must sacrifice individual freedom to an extent in order to gain a greater freedom but even more, a greater practicality.



## A STUDY OF THE ORAL (ORBICULARIS ORIS) REFLEX\*

BY NATHAN S. SCHLEZINGER, M. D., M.Sc.D.,  
NEW YORK, N. Y.

In recent years considerable interest has been manifested by neurologists and psychiatrists in the physiology and pathology of patterned movements in the region of the mouth. This renewed interest has been chiefly concerned on the one hand with the investigation of normal sucking in infants as related to dominance<sup>1</sup> and on the other hand with the investigation of the so-called sucking reflex as observed in certain neurologic disorders.<sup>2, 3</sup> In the course of my routine examinations on neurologic patients it was noted that in those patients with mouth puckering or mouth opening in response to visual or tactile stimulation the former pathologic reaction could also be elicited, and to a somewhat greater degree, by percussion stimulation of the lips. Later, in the course of my routine neurologic examinations on patients with psychiatric disorders it was discovered that this supposedly pathologic labial response occurred quite frequently and varied considerably as to intensity. This study was then conceived of as a means of determining the incidence and other characteristics of this response.

Although a large number of facial reflexes have been described during the course of the past 40 years they are rarely mentioned in current textbooks of neurology. Most of these reflexes have been reported as occurring in various neurologic diseases and have chiefly been considered from the standpoint of their pathologic significance. A review of the subject of facial reflexes has been made by Bartholomé.<sup>4</sup> To be particularly mentioned as having possibly some relationship to the oral reflex are those facial reflexes in which the perioral musculature is involved such as the ones described by Henneberg,<sup>5</sup> Cornil,<sup>6</sup> Oppenheim,<sup>7</sup> Astvatsatouroff,<sup>8</sup> Marinesco and Radovici,<sup>9</sup> Benedek and Kulcsar<sup>10</sup> and Gamper and Untersteiner.<sup>11</sup> A survey of the literature discloses that the oral reflex has been described previously under a variety of names by Escherich,<sup>12</sup> Thiemich,<sup>13</sup> Bechterew,<sup>14</sup> Toulouse and Vurpas<sup>15</sup> and Epstein.<sup>16</sup> It has been studied more intensively by Finkelstein,<sup>17</sup>

\*New York State Psychiatric Institute and the Neurological division of the Montefiore Hospital.

Moguillansky<sup>18</sup> and Divry and Evrard<sup>19</sup> and investigations somewhat similar to the one in this study were made by these authors. Their findings will be discussed later in relation to our own.

#### DESCRIPTION OF THE ORAL REFLEX

The oral reflex consists of a contraction of the orbicularis oris muscle resulting from a percussion stimulus applied to the lips. In this study the subjects have been examined in the recumbent posture with the eyes held closed by one hand of the examiner while the stimulus is gently but rapidly delivered by means of a percussion hammer held in the other hand. Usually the subjects have been given no intimation as to the nature of the test. In a few instances, where the mouth was not closed spontaneously or where the facial musculature was not relaxed, the subject would be instructed to close his mouth and to relax. Lack of cooperation in these respects has been a rare occurrence.

It was early discovered that the zone of excitability has its zenith at the center of the lips and diminishes steadily laterally along a line corresponding to the mucocutaneous margin of the lips. Therefore, the site of election for the application of the percussion stimulus has, in the absence of organic nervous disease, proved to be the center of the lips at their mucocutaneous margins. The response in the absence of facial paralysis, has always been a symmetrical contraction of the orbicularis musculature which, to the observer, manifests itself as a puckering or pursing of the lips. In other words, excepting cases with facial paralysis, whenever a response is obtained as the result of a unilateral stimulus it consists of a full-formed puckering of the lips. Occasionally, in the subjects where the response is strong, it has been possible to obtain a noticeable puckering of the lips as the result of a percussion stimulus applied over a cutaneous area of variable extent beyond the margin of the lips. It was noted in the subjects with minimal or moderately active responses that the reflex was often inconstant but it usually was of equal intensity in any single individual.

Further investigation revealed that body posture was apparently of no significance since the response did not vary as to appearance

or intensity in any individual as a result of changing from the recumbent to the sitting or erect posture. Therefore, although the dorsal decubitus has been used in this study, it is not essential that this be done. In many subjects the effect of vision upon the oral reflex was studied. It was discovered that in the majority of cases the response was unaltered as a result of opening the eyes while in a small minority there seemed to be a slight increase in the intensity of the response. In no instance was a visual stimulus alone sufficient to produce a response. The effect of tactile stimulation alone was also tested and it was found to be adequate for the production of a slight puckering in a few cases where the oral reflex was markedly exaggerated but was obtained only as a transient reaction immediately after the elicitation of the oral reflex by percussion. In many subjects voluntary grasping was tried in conjunction with the application of a percussion stimulus to the lips and in a few cases it seemed to facilitate the production of a response. Volitional tensing of the labial and perioral musculature completely inhibited the oral reflex with the exception of those cases in which the response was exaggerated and in these diminution occurred. Psychic facilitation seemed to be possible in some subjects where the oral reflex was of minimal or moderate intensity.

#### RESULTS OBTAINED IN THIS STUDY OF THE ORAL REFLEX

I. In a control series of cases the incidence of the oral reflex and its intensity were determined. This series consisted of a group of 16 healthy children varying from 135 days to 2,122 days in age and a group of 79 healthy adults varying from 22 to 55 years of age. There was no significant sex difference noted as to the incidence or intensity of the response. The incidence of the oral reflex and the variability as to its intensity at various age levels are indicated in Table 1. The mean intensity of response at different age levels is shown by means of a graph (Chart I). It will be seen that during infancy the incidence of the oral reflex is low and then apparently increases gradually until it reaches a constant level, averaging 59.5 per cent, during adult life. The mean intensity of response shows an increase proportionate to the increase in age.

TABLE 1. INCIDENCE AND INTENSITY OF THE ORAL REFLEX IN A CONTROL SERIES OF 16 CHILDREN AND 79 ADULTS

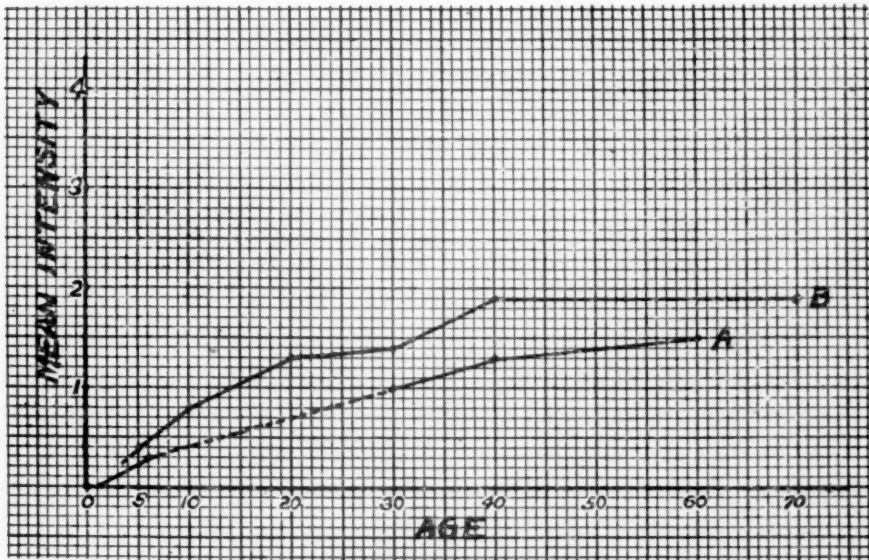
Age (years) Cases	1/3-6		20-29		30-39		Over 40		Total adults	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Intensity:										
0	12	75.0	18	41.9	9	42.8	5	33.3	32	40.5
1	3	18.7	12	27.9	3	14.3	2	13.4	17	21.5
2	1	6.3	9	20.9	4	19.1	5	33.3	18	22.8
3	0	0	3	7.0	3	14.3	2	13.4	8	10.1
4	0	0	1	2.3	2	9.5	1	6.6	4	5.1
Incidence										
(per cent)	25.0		58.1		57.2		66.7		59.5	
Mean intensity	0.3		1.0		1.3		1.5		1.2	

The comparatively high physiologic incidence in adults noted in this study is opposed to the findings of Fürnrohr<sup>20</sup> and Epstein<sup>16</sup> who reported that this reflex was absent in healthy adults. It differs considerably from the figures given by Finkelstein<sup>17</sup> (10.7 per cent) and Moguillansky<sup>18</sup> (11.7 per cent) but agrees more closely with the figures of Divry and Evrard<sup>19</sup> (44 per cent). The discrepancy in these figures is probably explainable on the basis of a varied interpretation as to what constitutes a positive response and on the basis of slight differences in the method of eliciting the oral reflex. For example, Divry and Evrard<sup>19</sup> elicit the reflex by percussion of the upper lip only and do not consider a contraction of the orbicularis oris muscle which is visibly limited to the upper lip as being a positive response. In the present study any visible contraction of the orbicularis oris muscle has been considered to be a positive response and the site elected for stimulation has been the center of both lips.

The comparatively low physiologic incidence during infancy is clearly demonstrated by the observation in this study of four nurslings, excluding the new-born, in all of whom the oral reflex was absent. This absence of response is in agreement with the observations of Fürnrohr<sup>20</sup> and Finkelstein.<sup>17</sup> In contrast to these findings are the incidence of the oral reflex in new-born infants. Fürnrohr examined 20 new-born infants varying from 1 to 7 days of age and noted an incidence of 60 per cent with the reflex present

in all cases between 1 and 4 days of age. Moguillansky<sup>18</sup> reported a positive response in 27.7 per cent of healthy new-born infants. In the present investigation a group of 20 healthy new-born infants varying from 1 to 9 days of age were examined. The response was found to be certainly positive in 13 cases (65 per cent), doubtfully positive in 5 cases (25 per cent) and absent in 2 cases (10 per cent). It should be mentioned that the oral reflex is frequently difficult to elicit in the new-born because of the almost constant spontaneous activity of the perioral musculature. The reflex, when present, is usually obtained after the initial stimulus but thereafter the response is inconstant probably as a result of the interference caused by spontaneous movement of the lips. This inconstancy of response has been noted by Popper<sup>21</sup> who also expressed the belief that tactile stimulation was more effective in eliciting an oral response in the new-born.

CHART I



Mean intensity of the oral reflex as related to the age  
A. Control group. B. Group having psychiatric disorders.

II. In a series of 246 patients with psychiatric disorders, varying from 4 to 63 years of age with 34 cases under 10 years of age



and 27 cases over 40 years of age, the incidence of the oral reflex and its mean intensity at various age levels were determined (Table 2). In the children under 5 years of age the incidence (40 per cent) and the mean intensity (0.4) were comparatively low as in the control series but among the adults there was a definite increase in the incidence, averaging 76.9 per cent, and in the mean intensity at various age levels (Chart I). In this series the mean intensity of response showed an increase directly proportional to the age just as in the control series. The incidence of the oral reflex in mental disease has previously been reported by Epstein<sup>16</sup> as 66 per cent and by Finkelstein<sup>17</sup> as 83.2 per cent.

III. The incidence of the oral reflex and its mean intensity were determined in a group of 93 patients having dementia præcox, in a group of 38 patients having manic-depressive psychoses and in a group of 61 patients with psychoneuroses (Table 3). It will be seen that in these groups the highest figures for incidence and mean intensity of response occur in the dementia præcox group and the lowest figures in the manic-depressive group. Figures in the control group are lower than those noted in any of the above groups with specific psychiatric disorders. It has been stated by Epstein<sup>16</sup> that the oral reflex is absent in the neuroses. Finkelstein<sup>17</sup> gave the incidence in the neuroses as 24.9 per cent and Divry and Evrard<sup>19</sup> gave it as 43.7 per cent. The latter authors have reported the incidence of the oral reflex in dementia præcox as 51.1 per cent.

The occurrence of the oral reflex was also noted in a miscellaneous group of psychiatric patients where the number of cases was insufficient for statistical evaluation. In 6 cases of involutional melancholia the oral reflex was absent in 3, active in 1 and exaggerated in 2. In 2 cases of psychopathic personality the response was active in both. In 2 cases of psychosis with cerebral arteriosclerosis the response was exaggerated in both. In 5 cases of mental deficiency the oral reflex was absent in 1, feeble in 3 and active in 1. In 2 cases of epilepsy the response was absent in 1 and feeble in the other.

TABLE 2. INCIDENCE AND INTENSITY OF THE ORAL REFLEX IN A SERIES OF 246 PATIENTS WITH PSYCHIATRIC DISORDERS

Age (years) Cases	1-4		5-9		10-19		20-29		30-39		Over 40		Total adults	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Intensity:														
0	3	60.0	14	48.3	13	24.5	22	25.6	6	13.0	8	29.7	49	23.1
1	2	40.0	9	31.0	18	34.0	23	26.7	14	30.4	4	14.8	59	27.8
2	0	0	5	17.2	17	32.0	26	30.2	10	21.8	4	14.8	57	26.9
3	0	0	1	3.5	3	5.7	13	15.1	10	21.8	5	18.5	31	14.6
4	0	0	0	0	2	3.8	2	2.4	6	13.0	6	22.2	16	7.6
Incidence (per cent)	40.0		51.7		75.5		74.4		87.0		70.3		76.9	
Mean intensity	0.4		0.8		1.3		1.4		1.9		1.9		1.6	

TABLE 3. INCIDENCE AND INTENSITY OF THE ORAL REFLEX IN SPECIFIC NEUROLOGIC AND PSYCHIATRIC DISORDERS

Diagnosis Cases	Control		Manic-depressive		Psychoneurosis		Dementia præcox		Hemiplegia		Parkinsonism		General paralysis	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Intensity:														
0	32	40.5	11	29.0	14	23.0	18	19.4	3	25.0	0	0	0	0
1	17	21.5	8	21.0	19	31.1	25	26.9	3	25.0	1	10.0	0	0
2	18	22.8	12	31.6	13	21.3	27	29.0	4	33.3	2	20.0	0	0
3	8	10.1	4	10.5	10	16.4	17	18.3	2	16.7	5	50.0	1	14.3
4	4	5.1	3	7.9	5	8.2	6	6.4	0	0	2	20.0	6	85.7
Incidence (per cent)	59.5		71.0		77.0		80.6		75.0		100.0		100.0	
Mean intensity	1.2		1.5		1.6		1.7		1.4		2.8		3.8	

IV. In a group of 136 patients the intensities of the superficial abdominal reflexes and of the tendon reflexes of the extremities were determined and compared with the intensity of the oral reflex. The cases in this group varied from 4 to 63 years of age with 15 cases under 10 years of age and an equal number over 40 years of age. The intensity of the reflex response was graded on a scale where the minimal observable response was considered as 1 and the maximum as 4. The coefficient of correlation between the oral and tendon reflexes was found to be  $.35 \pm .05$  and the coefficient of correlation between the oral and abdominal reflexes  $.27 \pm .06$ .

V. In order to investigate the peripheral neural pathways through which the oral reflex is mediated, seven patients with trigeminal nerve paralysis, either complete or affecting the maxillary and mandibular divisions, and six patients with complete facial nerve paralysis were examined. In the latter group the oral reflex, when present, could only be obtained by stimulation applied to the center of the lips or to the unparalyzed side. The response was always limited to a contraction of the orbicularis oris musculature of the unparalyzed side.

In the group with trigeminal nerve paralysis it was discovered that the oral reflex, when present, was frequently diminished when obtained by stimulation of the anesthetic portion of the lips as compared with the response obtained by stimulation of the center or unaffected portion of the lips. In 2 patients the reflex could only be elicited by stimulation contralateral to the anesthetic side but the response consisted of a full-formed symmetrical contraction of the orbicularis oris muscle; in one of these patients an equally active response had been obtained preoperatively by stimulation applied to either side. In 1 case of trigeminal neuralgia the oral reflex elicited by stimulation homolaterally was found to be increased preoperatively and diminished postoperatively as compared with the response obtained by stimulation contralaterally.

VI. In order to ascertain the possible effects of lesions involving the central nervous system and causing a disturbance of tonus, 12 cases of hemiplegia, 10 cases of parkinsonism and 7 cases of general paralysis were examined (Table 3). It was discovered that the oral reflex in the group of hemiplegias was frequently di-



minished when elicited by stimulation of the paralyzed side. This observation is contrary to what has been reported by some observers for other facial reflexes<sup>22</sup> but is in agreement with some of the findings reported by Fürnrohr<sup>20</sup> and by Divry and Evrard.<sup>19</sup> The oral reflex was present in 9 of the 12 hemiplegics giving an incidence of 75 per cent. The response was diminished on the side of paralysis in 6 cases; equal on the two sides in 2 cases; and increased on the side of paralysis in 1 case. It is noteworthy that in all of the cases with homolaterally diminished responses a left hemiplegia existed, whereas in the other 3 cases the right side was paralyzed. In a case of pseudobulbar palsy the oral reflex was found to be exaggerated. The frequent occurrence of the oral reflex in cerebrovascular disease has been commented upon by a number of authors and the incidence in a mixed group has been given by Divry and Evrard<sup>19</sup> as 82.9 per cent. It is well to remember that most of the patients in this group were in the sixth and seventh decades of life. The mean intensity of the oral reflex in the group of hemiplegias (1.4) corresponds closely with that noted in the control group for a similar age level (1.5).

In the group of cases with parkinsonism the majority were considered to be of the postencephalitic type. In 6 cases there was no clinical evidence of associated involvement of the pyramidal tracts while in 4 this association was observed. An exaggerated oral reflex seemed to occur more frequently in the former type but the response was present in all cases and was feeble in only 1 case. The mean intensity of the oral reflex in this group showed a considerable increase (2.8) when compared with the control series and with the series of cases having psychiatric disorders.

In the 7 cases of general paralysis the oral reflex was found to be present and exaggerated in all. This incidence of 100 per cent was also reported by Fürnrohr<sup>20</sup> who examined 28 cases. The exaggerated character of the response was commented upon by Bechterew<sup>14</sup> and is well shown by the greatly increased mean intensity (3.8) noted in this study.

A pathologic mouth-opening response was noted in one case of parkinsonism with associated pyramidal tract involvement and in 1 case of hemiplegia. In both cases an active but not exaggerated

oral reflex was elicited. The regular occurrence of the oral reflex in cases with pathologic sucking responses has been noted by Bieber.<sup>23</sup>

VII. In a series of 18 cases the oral reflex was elicited during coma produced by hypoglycemia and the intensity of response was compared with that noted previously while the patients were conscious. Since the depth of coma varied considerably the plantar reflex was also noted. The change in the intensity of the oral reflex was quite noticeable in some cases and usually consisted of an increase (8 cases) but in 3 cases a diminution in the intensity of response was observed. In 6 cases the oral reflex showed no change during coma as compared with its status previously. Especially noteworthy are: the case in which a previously absent oral reflex was replaced by an exaggerated response during coma; and the case in which a previously feeble oral reflex first became active and then disappeared during coma. There were 2 patients who displayed a *Schnauzkrampf* as they became stuporous, and both had exaggerated oral reflexes. In some of the cases with active or exaggerated oral reflexes during coma it was noted that the response had a tonic character with contraction of the orbicularis oris muscle persisting as contrasted with its usual rapid relaxation. In this connection it may be recorded that a similar tonic response was observed in a case of deep stupor associated with increased intracranial pressure. In this patient the oral reflex was present only when she was partially aroused by mechanical stimulation and its presence was regularly accompanied by the appearance of such phenomena as bilateral hand and foot grasping. It may also be mentioned at this point that an active oral reflex was obtained in a hydrocephalic child three years of age who showed a typical decerebrate rigidity and in whom rhythmical sucking movements occurred spontaneously at irregular intervals.

#### DISCUSSION

As has already been mentioned the oral reflex, which is the subject of this study, belongs to the general group of facial reflexes and, more particularly, to those involving the perioral region. It is unfortunate that the various facial reflexes in the region of the

mouth have so often been confused with each other and there is a great need for a definitive nomenclature so as to avoid a continuance of such confusion. For the purpose of better understanding the oral reflex it should be clearly distinguished from those reflexes in the region of the mouth which differ as to the mode of stimulation and from those which differ as to the character of response. Examples of such reflexes are the palatolabial reflex,<sup>5</sup> linguolabial reflex,<sup>6</sup> *Fressreflex*,<sup>7</sup> et cetera. When this distinction is made it may be pointed out immediately that the oral reflex as contrasted with the others is essentially physiologic since it is present in a large proportion of healthy adults.

The reaction described in this study as the oral reflex has been considered by a number of previous authors<sup>12, 5, 20</sup> to be a manifestation of mechanical muscle irritability. Such an explanation regarding the origin of this labial response was offered before the experimental work of Liddell and Sherrington<sup>24</sup> proved that many muscle phenomena, such as the knee jerk, previously considered as due to mechanical irritability, were actually reflexes produced by means of afferent proprioceptive stimuli coursing centrally via the "motor" nerve supply of muscles and were akin to the stretch reflex. The great significance of the proprioceptive reflex arc in the activity of the central nervous system has been described by Hoffmann.<sup>25</sup> This apparently innate muscular reaction has been termed the myotatic reflex and its characteristics have been studied by Fulton<sup>26</sup> and more recently by Schaltenbrand.<sup>27</sup> The oral reflex from the manner of its production and the character of the response should therefore be considered as being essentially a myotatic reflex. Basically there must be a reflex arc having an afferent pathway, a reflex center and an efferent pathway.

A review of the anatomy of the peripheral neuromuscular mechanism involved in the production of the oral reflex will serve to outline the afferent and efferent neural pathways concerned as well as to introduce a consideration of the more complex physiology of this mechanism. The muscles of the face may be divided into groups related to the eyes, the nose and the mouth. In the region of the mouth there are numerous muscles of which all but one, the orbicularis oris, are bilaterally situated. It is this muscle which is

primarily involved in the performance of the oral reflex. The orbicularis oris muscle lies between the skin and mucous membrane surrounding the mouth. It acts as a sphincter muscle of the lips and also serves as the point of insertion for the converging perioral musculature. The action of the orbicularis oris is complex and depends on the degree of contraction of its component parts. It may tighten the lips over the teeth; or contract them as in osculation; or cause pouting.<sup>28</sup> The response obtained in the oral reflex may be compared with the last one or two of these actions.

The orbicularis oris, like the other facial muscles, is innervated by the facial nerve. This fact is well established and the cases of facial nerve paralysis included in this study serve to verify this point. In addition, they show the complete dissociation of peripheral innervation of the orbicularis oris on the two sides. On the other hand the afferent neural pathway from the facial muscles was for many years not definitely known. Conduction via the trigeminal nerve was favored by some neurologists and conduction via the facial nerve by others. The former view was originally based on the hypothesis that muscles have no sensory function but, when this theory was no longer tenable, was replaced by the conception that deep sensibility might be conducted from the facial muscles through the facial nerve peripherally but reached the brain stem through the trigeminal nerve centrally.<sup>29</sup> One of the neural pathways postulated for this transference was the greater superficial petrosal nerve. In recent years the view of facial nerve conduction throughout has become the widely accepted one. The experimental and clinical observations reported by Davis,<sup>30</sup> as well as anatomic and physiologic evidence, seem to show conclusively that deep sensation from the facial muscles passes centrally via the facial nerve.

The results of the investigation of the oral reflex in cases with trigeminal nerve paralysis likewise appear to support the belief that proprioceptive sensation passes centrally by way of the facial nerve. In the cases observed in this study the oral reflex was found to be present in all except two. Such continued existence of the oral reflex in response to stimulation on the anesthetic side seems to preclude the possibility of proprioceptive sensory con-

duction via the trigeminal nerve. The apparently puzzling alterations in the oral reflex, varying from absence to undiminished responses, subsequent to trigeminal nerve section are probably explainable on the basis of the existence of two mutually reinforcing afferent neural pathways which conduct exteroceptive and proprioceptive stimuli by way of the trigeminal and facial nerves respectively. These two forms of sensation both result from percussion stimulation of the lips and facilitate each other centrally so as to produce or intensify the motor reaction. Of the two forms of sensation the proprioceptive, mediated through the facial nerve, would seem to be the more essential one necessary to produce the oral reflex. Also explainable on this basis is the occurrence, in a case of trigeminal neuralgia in response to homolateral stimulation, of a comparatively increased oral reflex preoperatively which was supplanted by a comparatively diminished response postoperatively. In support of the hypothesis of double afferent neural pathways for the production of the oral reflex is the not infrequent observation clinically of facial spasms in the presence of irritative lesions affecting the trigeminal nerve. Additional supportive evidence for this hypothesis is furnished in the description by Magnus<sup>31</sup> of the "static" reflex which manifests itself as a positive supporting reaction. The facilitative role ascribed to exteroceptive stimuli in the production of the oral reflex would seem to be favored by the anatomical fact that the site of election for the elicitation of this reflex, namely the lips, corresponds to an area richly endowed with specialized exteroceptive sense organs.<sup>32</sup> In this connection it may be mentioned that the reflexogenous zone for sucking described by Haenel<sup>33</sup> as consisting of the hard palate, the tip of the tongue and the lips also corresponds anatomically to the oral region where special tactile sense organs are said to be located.<sup>32</sup>

The full-formed contraction of the orbicularis oris muscle resulting from a stimulus applied unilaterally is probably due to a central synergistic crossed reflex innervation produced in the presence of an adequate stimulus. That the intensity of this full-formed contraction is in some measure determined by the intactness of the afferent neural pathways finds support in the striking difference



in the intensity of the oral reflex noted in certain cases of trigeminal anesthesia when the two sides were stimulated separately.

As regards the location of the neural center for the oral reflex certain evidence obtained clinically and pathologically points toward a site in the brain stem probably in the rhombencephalon. Cornil and Bertillon<sup>34</sup> and Gamper<sup>35</sup> have shown that the oral reflex persists in cases of anencephaly. Divry and Evrard<sup>19</sup> noted the existence of the oral reflex in decerebrated cats. Clinically, the presence of the oral reflex in cases where decerbrate features are prominent would also favor the location of the reflex center in the brain stem. In this respect the oral reflex would appear to be closely related to certain other reflexes in the region of the mouth such as the palato- and linguolabial reflexes.

With a clearer conception of the components of the underlying reflex arc as outlined above it is necessary to consider the neural structures and function within the central nervous system which influence this arc. This serves to introduce the very significant question as to how physiologic and pathologic variability of the oral reflex occurs where the reflex arc itself is intact. The adequacy of a proprioceptive stimulus in eliciting a tendon or myotatic reflex is dependent upon that important but incompletely understood physiologic phenomenon, tonus. Muscle tone is the basis of reflex posture and its character is determined through the action and interaction of various nuclear masses in the brain. Since the oral reflex appears to be essentially a myotatic reflex it can readily be seen how important a role tonus plays in determining its variable character in different individuals. Beyond presenting the clinical data obtained in this study, which will confirm the relationship between tonus and the oral reflex and show how the former influences the latter, there is little that can be given which would help to elucidate the enigma of tonus.

The positive correlation noted between the oral reflex and the tendon reflexes of the extremities and, to a lesser extent, the superficial abdominal reflexes is evidence supporting the belief that tonus is one factor common to all of these. The relatively low degree of correlation between the oral and tendon reflexes finds a probable explanation in the fact that the tendon reflexes used in this study

were unfortunately not the best for purposes of comparison. It was later discovered that the jaw reflex showed a considerably higher degree of correlation with the oral reflex than did the tendon reflexes of the extremities. Further investigation will be necessary to verify this statistically but it may be added that support for this assumption can be gathered from the statements of such authors as Bechterew<sup>14</sup> who long ago observed markedly exaggerated jaw reflexes in the same cases of general paralysis in which he noted the exaggerated character of the oral reflex. The greater correlation between the jaw reflex and the oral reflex, including the absence of both in healthy persons, is readily understood in view of the cranial nerve innervation of both reflexes.

The greatest incidence and mean intensity of the oral reflex is noted in the cases having general paralysis or parkinsonism. In view of the importance ascribed to tonus it is not surprising that such a correlation is observed. Hypertonicity is a feature found in both of these diseases and manifests itself in such signs as exaggerated tendon reflexes, tremors, rigidity, etc. However, the frequent observation of a diminished oral reflex on the paralyzed side in the cases having hemiplegia was unexpected. In regard to this puzzling and apparently paradoxical diminution of the oral reflex in hemiplegics it can be pointed out that the hypertonicity in diseases affecting the pyramidal tracts is unlike and clinically distinguishable from that in diseases where the pyramidal tracts are spared. This homolaterally diminished oral response may also be thought of as possibly being related to the similar change observed in the abdominal reflexes of hemiplegics.

The positive relationship, excepting new-born infants, which exists between increased incidence and intensity of the oral reflex and increase in age is well shown in this study (Tables 1 and 2; Chart I). This physiologic correlation of the oral reflex with age is suggestive of a corresponding physiologic change in the tonus of the perioral facial musculature. In this connection it is noteworthy that there is no positive correlation in infants between the oral reflex and the tendon reflexes of the extremities, especially of the lower extremities, since the former is absent while the latter are active. However, this apparent lack of correlation in infancy

is not true if one substitutes the jaw reflex as the tendon reflex to be used for comparison since the jaw reflex is rarely observed during infancy. It may be mentioned that segmental variability of tonus in healthy persons, especially between cephalic and caudal levels, is a subject worthy of further investigation. Among the cases observed in this study such variability was noted.

When one considers the possible significance of the oral reflex in psychiatry and psychopathology it immediately becomes apparent that the problem here is one primarily concerned with the nature of the oral reflex insofar as it is an expression of the total personality or psychosomatic constitution of the individual. It has been demonstrated in this study that the oral reflex in healthy adults shows a variability from absence to an exaggerated response and that this variability seems to reflect the degree of tonus in the orbicularis oris muscle and, to a lesser extent, in the body musculature generally. The conclusion to be drawn is that variations in the oral reflex are not pathognomonic of specific psychiatric disorders just as they cannot be considered pathognomonic of specific neurologic disorders.

However, statistical evaluation of the data obtained in this study does demonstrate an increase in the incidence and mean intensity of the oral reflex in the group of patients with psychiatric disorders as compared with the control group. A differential analysis within the former group reveals this increase to be most marked in the cases classified as dementia præcox. It may be well to point out that the incidence and mean intensity of the oral reflex in dementia præcox exceed the figures noted in the group of vascular hemiplegias. This difference is even more striking in view of the age factor which would be expected to favor an increase in the latter disease. One must therefore consider the probability that the oral reflex is indicative of a psychosomatic relationship existing in dementia præcox whereby an increased tonus is manifested in the perioral musculature. Evidence for the existence of such an interrelationship in dementia præcox is seen in certain psychomotor phenomena of a reversible character in which alterations in tonus are a prominent feature. Catatonia and *Schnauzkrampf* are striking examples of such a psychogenic disturbance of muscle tone as



are also a variety of motor phenomena such as tremors, paralyses, et cetera, not infrequently observed in both hysteria and dementia præcox. No matter whether it is permanent or temporary this variability of tonus in psychiatric disorders bears witness to the functional influence of the psyche upon the mechanism of tonus mediated through neural pathways connecting the cerebral cortex with lower levels of the central nervous system.

Oral physiology and symptomatology have been receiving increasing attention in psychiatry.<sup>36</sup> In a large measure this has been a result of the importance that has come to be attached to the oral region of the infant as representing a dominant phase in the normal psychic development of the individual. The dominance of certain neuromuscular zones of the body has been the subject of investigation in various animals, and a notable example of such a study is the one dealing with the clasping reflex of the frog.<sup>37</sup> As manifested in the oral zone of nurslings dominance has been the subject of study recently by Peiper.<sup>1</sup> He has shown that in infants in whom the sucking center is in a heightened state of irritability sucking movements will occur in response to a variety of stimuli which ordinarily would not be expected to result in a sucking response. Clinical observations seem to verify this concept of oral dominance insofar as it is reflected in a contraction of the orbicularis oris muscle. A contraction of this muscle in response to stimulation applied in locations some distance removed from the lips has been noted in the form of certain pathologic facial reflexes and was occasionally observed in this study when the oral reflex was exaggerated. The same phenomenon was reported by Stevenson<sup>38</sup> as a physiologic occurrence in new-born infants. Thus, it is apparent that a percussion stimulus applied at a variable distance from the lips is capable of eliciting a full-formed puckering response.

That the oral zone occupies a relatively important position early in the development of the individual is indicated by the observations of Minkowski<sup>39</sup> who noted the early appearance and persistence of oral responses in the human foetus. The high physiologic incidence of the oral reflex in the new-born may similarly be considered as a continued expression of oral dominance. Since onto-

geny tends to recapitulate phylogeny it is not surprising to discover that a relatively dominant role has often been ascribed to the oral or snout region of animals. The observation by Tracy<sup>40</sup> of an oral response as the first reflex to make its appearance in the toadfish is an interesting and significant finding. In this connection reference may be made to the recent highly important studies in experimental embryology which deal with the problem of dominance as manifested in the zones or "fields" of the embryonic organism.<sup>41</sup>

The data obtained in this study suggest the possibility that the oral reflex may be an indication of oral dominance produced psychodynamically in some cases. This process could be manifested either as a physiologic phenomenon in psychosomatic development or as the psychopathologic phenomenon of regression in psychiatric disorders. One may be apt to see support for such a hypothesis in the apparent similarity between the oral reflex, the physiologic sucking reflex and the pathologic facial reflexes in the region of the mouth. The statistically-increased incidence and mean intensity of the oral reflex in dementia præcox might also conceivably be used as evidence of a psychodynamic regression in this psychosis. It is interesting to note that, in a discussion of the oral reflex, Galant<sup>42</sup> has referred to the parallelism he has noted between some of the clinical features of dementia præcox and certain primitive reaction patterns in animals.

The question of dominance within the central nervous system as a determining factor in the production of primitive reflexes such as sucking and grasping is closely allied with the concept of inhibition of lower levels through the intact functioning of higher levels of the nervous system. A release from such inhibition has been the basis of the theory used to explain the reappearance of certain primitive reaction patterns in which changes in tonus are prominent. The occurrence of pathologic facial reflexes in organic nervous disease has similarly been ascribed to a removal or impairment of cortical inhibition. However, it does not appear likely that a simple release phenomenon is sufficient to explain the physiologic occurrence or exaggeration of the oral reflex. It seems more probable that this physiologic variability of the oral reflex is a

result of a correlated and coordinated functioning of the entire brain in which a relative dominance of certain primitive reaction patterns may be reflected in a somatotopic alteration of tonus.

#### SUMMARY AND CONCLUSIONS

1. The oral reflex is a facial reflex in the region of the mouth which is elicited by percussion stimulation of the lips. The response consists of a contraction of the orbicularis oris muscle which takes the form of a puckering or pursing of the lips. This reflex is considered to be essentially a myotatic reflex with afferent and efferent neural pathways located in the facial nerves and a reflex center probably situated in the rhombencephalon. Evidence is given to support the belief that there exists a second reinforcing afferent neural pathway in the trigeminal nerves.

2. The oral reflex in the character of its response resembles certain other facial reflexes in the region of the mouth such as the palatolabial, linguolabial and naso-oral reflexes. The response is the same as the labial component of the sucking reflex. There is probably a basic neural relationship between these various reflexes.

3. Investigation reveals a physiologic incidence of the oral reflex in 59.5 per cent of adults with the intensity of response variable in different individuals. The reflex, appearing as an inconstant feeble response, shows a high incidence in the new-born but disappears shortly after birth. Subsequent to the first year of life it shows an increase in the incidence and mean intensity of response in correlation with increase in age.

4. The incidence and mean intensity of the oral reflex are comparatively increased in psychiatric disorders, most noticeably in dementia præcox, and are markedly increased in some neurologic disorders such as parkinsonism and general paralysis where hypertonicity, which is not a result of pyramidal tract involvement, exists.

5. The oral reflex, contrary to the opinion of some observers, is not a pathologic response and therefore cannot be considered as pathognomonic of either specific neurologic or specific psychiatric disorders. It is rather to be thought of as a manifestation, either

physiologic or pathologic, of individual variability of tonus in the perioral musculature.

6. A determination of the oral reflex may be included in routine neurologic examinations and the intensity of response may be used as an indicator of muscle tone in the region of the mouth. In addition, this reflex may be viewed as a possible expression of oral dominance and, as such, may prove to be an aid in studying and understanding the psychodynamic reaction patterns of normal persons and psychiatric patients.

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## SITUATIONAL SCHIZOPHRENIA

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Although in the majority of cases of dementia præcox the psychosis, resultant of interaction between the quality of the individual and what happens to him, has its explanation hidden chiefly within the biophysic organism, there are cases of "situational" schizophrenia, where the causal factors are in the foreground. In such cases the psychosis often appears to be of an hysterical, wish-fulfilling nature; it reveals its structure clearly to psychoanalytic interpretation; it openly carries the advantages of a purely psychogenic flight into disease; it is a biopsychic upset with intention or purpose, with "method in the madness"; it is a protective rather than a destructive force. Most such postmotive, reactional disturbances eventually and spontaneously disappear and are in general regarded as essentially self-limited syndromes.

### REPORT OF CASE

*Personal and Family History.* Anna L. was born in New York City in 1898 of a Bohemian father and an Irish mother. The mother had no difficulties during the period of gestation. Labor was difficult and delivery instrumental but otherwise uncomplicated. Early developmental history is essentially negative. Only measles and mumps, at age seven, are recalled of the childhood diseases. Neurotic manifestations and habit disturbances are denied.

A. L. started school at seven, failed once in the fourth grade, and was graduated from public school at 15, an average pupil. She attended high school for six weeks, discontinuing because she found English and German too difficult. She then attended a course in bookkeeping and typing at night high school for one year.

For 12 years she worked as a clerk in a large department store where her salary slowly increased to \$25 a week. During the next four years she was a billing clerk in a cosmetic store and then for three years a typist in a business office, her salary \$35 a week. She has been unable to secure employment since 1932.



At her places of employment she enjoyed her work, was capable, willing and ambitious and she got along well with her fellow employees. Although she had always been quiet, timid, shy and "tongue-tied" in the presence of strangers, she became friendly and at ease after acquaintanceship was well established. People quickly "took to her" because of her pleasant cheerfulness, her easy going, docile agreeableness and obedience. However, her friendships were few, mostly of a superficial sort, and they were carefully selected.

She has always been overprotected, submissive, easily frightened, with tendency toward anxiousness and foreboding. Reactions to difficulties were strong. Always she has been seclusive, with a narrow range of interests. Spasmodically she showed inclination toward matters of a philosophical nature. Sensitivity was strongly ingrained. "She blushed at anything." Her feelings hurt, she would not speak for days, would be sullen, sulky, resentful. Her suspiciousness often brought out irritability and quick temper and a stubborn conviction that she was right in her judgments and decisions.

However she is said to have been unselfish; to ask a favor was to have it granted even if this seriously inconvenienced her. While not demonstrative, she was "the most loyal woman in the world and would do anything at all for her mother." She was never jealous of the success of others and she never passed a beggar without giving him a coin. For herself she sought no sympathy, indeed resented such attentions, and she expressed no self-pity. She was patient, tolerant, tactful, reticent.

Menses were established at the age of 11, at which time masturbation developed and was indulged in about once monthly, generally just before the onset of the menstrual period.

A. L. was married first in 1918, when she was 20, to a childhood playmate. At the time, he was on furlough from a training camp in the south. The couple lived together for one week, but sexual intercourse was attempted only on the night of the marriage, because "it was too painful to me." The husband died of pneumonia a few days after returning to camp.

She was married again, in 1924, to an already married man, al-

though she was not then aware of this. Sexual relations took place about once weekly. A. L. regretted this marriage whenever more frequent demands were made of her and she continued to offer complaints of pain as the reason for her objection to intercourse. Annulment followed within one year, after a pregnancy had been aborted.

Her third marriage took place in 1933 and was kept secret from her mother. She married a British West Indian, an accountant, who had several months previously been taken into the home as a boarder. Secrecy was strictly maintained because of the mother's emphatic objection to the marriage. The boarder was a divorced man and the patient a devout Catholic; furthermore, he had colored blood. In addition to this the patient did not wish to give up a pension of \$30 a month she received from the Federal government as a war widow.

With her third husband sexual relations also occurred about once weekly and generally after her parents had fallen asleep and she could safely enter his room. A. L. never sought attention in this direction. Although she did not resist his advances she never became sexually aroused, never attained orgasm unless this was achieved by masturbation. "She never thought of sex."

Characteristically, she suspected her husband of being unfaithful almost from the marriage day. She began to stand outside his office building for hours at a time to ascertain whether he went out with other women, and she constantly accused him of infidelity. She would often advise him that she had been "born with a veil," that she had on two occasions (once in 1930 and again in 1936) been visited by spirits, that consequently she was gifted with occult powers, and moreover, that frequently-consulted fortune tellers had assured her of the correctness of the belief. The husband often answered, "You ought to have your head examined."

There is no history of frank sexual perversion. A. L. is said to have been "passionately devoted" to two women friends but, as far as can be ascertained, overt homosexual activities were never practised.

Of her parents, A. L. loved the father more. He was kind and gentle, tolerant and affectionate—"Like myself." His death in

1934 at the age of 66 was accidental. He had been a healthy, robust individual, who had just completed 29 years as foreman of a slaughter house. He was of a seclusive nature, home-loving, a good husband, who submissively permitted his wife complete domination of the home. A. L. reacted very strongly to his death. "I couldn't talk for a day or two. It affected me like that. I kept quiet."

The mother, now 69 years old, is apparently of a type to whom the dominating role could not have been easily denied. Information from various sources indicates that she is psychopathic, "slightly off," very self-centered, "one of the worst types you ever met," and "one that no one in the world would say a good thing about." She dominated not only her husband but also a son, now 36 years of age, and particularly A. L., whom "she never allowed to grow up."

A. L.'s mother has suffered a disabling arthritic spinal condition since 1926. For four years she has been a great burden to the patient, who assumed the difficult task of nursing her in addition to performing all the household duties, which to her had always been particularly irksome. The mother, very demanding and exacting, took up every moment of A. L.'s spare time. Her disagreeable nature, intensified by enforced stay in bed, kept the atmosphere of the home highly charged. Despite this, A. L. continued her tasks without complaint or evident resentment. Every beck and call by the mother (and these would come at once if A. L. left her side) found her ready to comply with her every request. A. L. was indeed a little child, unquestioning, blindly obedient, grown accustomed to expect that her activities be directed and controlled by the mother.

Notwithstanding her profound dislike for housework she kept the home "neat as a pin." Her duties were performed very systematically, on schedule. Everything had to be just so. Disorder in the surroundings annoyed and upset her. Though her output of energy fluctuated considerably she showed no evident tendency to shirk her work, excepting that she earnestly sought outside employment.

Physical comfort meant a great deal to her. Great particularity was shown in the foodstuffs and their careful preparation. She

overdid the washing of her hands and kitchen utensils. Disgust and nausea at the slightest suggestion of uncleanness were readily aroused. A vaginal douche was employed daily.

*Psychosis.* For about a year A. L. had become increasingly suspicious, easily irritated and unstable. She suspected wrongly, but with growing assurance, that her husband was unfaithful. Arguments with him over this idea became an almost daily occurrence. In severe emotional outbursts of profound jealousy she forced him to confess to acts of infidelity he never performed. The emotional storms were immediately dispelled by such false confessions, the husband was whole-heartedly forgiven, then mildly admonished not to continue "his acts."

In late January, 1938, the patient's mother became entirely bed-ridden, almost completely helpless, and A. L. suffered an exaggerated despondency because of this situation. On February 13 the mother fell out of bed. A. L. exhibited a marked reaction of fear and anxiety and an oversolicitous attitude though the mother had received no injury. The following morning A. L. went shopping as usual. In a grocery store she asked that her purchases be put in two separate bundles, one for herself and one for her mother. At home she accused the landlady of having a system of "wires" in the cellar of the house and she said that these carried knowledge of her every activity, that she was being followed and watched, and that often she could not walk. She insisted that there was electricity in the bodies of people about her.

At night she stated that she heard people going back and forth through the cellar door, and walking up and down on the sidewalk before the house. During the night she was kept awake by what she alluded to as "strange noises." She described a small, intensely bright light which, she insisted, was shining underneath a mirror on the bedroom wall, and she stated that it "affected her head."

For 10 days then she scarcely ate and slept at all. Each night she talked of people walking up and down, upstairs and outside. She appeared deeply absorbed and mildly apprehensive. She confided in her husband that people were against her and that the landlord had a dictaphone arranged so that he could hear what was

going on in their apartment. Mostly, however, she kept her ideas to herself.

On February 22, the patient misinterpreted a visitor as being "a criminologist sent by the Federal government" and she insisted that "G men" were giving her gas in order to examine her mind. During the night she awoke and said that the house was full of gas, that she could hear the stove move, and that criminologists were working on her brain, filling her full of electricity. She insisted on sitting at an open window despite the very cold weather and could be persuaded to return to bed only after three hours.

The following day she said that she was afraid to leave the house, that she was being followed by a hundred people, and that the radio was recording her every thought and statement, as evidenced by static. She kept insisting on wetting her face with cold water and holding cold metals in her hands. She loudly announced her marriage to the neighbors and confessed it to her mother. The latter, finally noting abnormalities of the patient's behavior, tried to persuade her to seek medical attention. The patient objected strenuously and said she would kill herself if this were insisted upon. However, the family physician was called secretly and he advised hospitalization.

*At Kings County Hospital.* Admitted February 25, 1938. The physical examination was negative. "Patient is uncooperative. She slouches about, making dramatic gestures as if going into a swoon. She gives free utterance to delusions of a persecutory character based upon misinterpretations of events in her surroundings, auditory hallucinations and delusions of influence including telepathy and clairvoyance. These tend to dominate her judgment and to interfere with her social adaptability. Insight into her morbid mental condition is completely lacking."

*At Kings Park State Hospital.* Admitted March 5, 1938. She was cooperative to the admission routine. She remained quietly in bed, self-absorbed, paying no attention whatever to the surroundings, her eyes usually tightly closed. Occasionally she wept silently. It became necessary to spoon feed her since she stubbornly refused to eat of her own accord, and then she resisted mildly. At times she assumed rigid, awkward postures. She did not attend



to her personal needs, had to be led to the toilet. She often refused to walk, sinking to the floor unless supported. Once she said spontaneously that she was dead.

She first inquired of the admitting physician whether he were a criminologist or a reporter. At the start she refused to answer questions, sat self-absorbed, with eyes shut. Shortly, however, her attention could be held, and her cooperation improved. An inclination toward evasion was rather easily overcome and the replies elicited were soon prompt, relevant, coherent.

She said that she had had "a brain attack" one week previously and added confidentially that this had been brought on by a guilty conscience. She explained that she had been receiving a government pension as a war widow, that she had married under an assumed name and that her marriage had been kept secret in order that she could continue to receive this money. As a result, she said, the government had caught up with her and had started to persecute her; men and women followed her and kept her under complete surveillance wherever she went; they signaled to one another by blowing automobile horns, by moving window shades up and down and turning lights on and off.

Finally, she stated, wires and machines were installed in her home by Federal, State and city authorities to spy on her; wires installed in the cellar of her home were connected with similar wires in the cellar of the house next door. A dictaphone and an oscillograph began to record her thoughts and to observe her every move. Full knowledge of her guilt was in this way discovered and scandalous comments were made concerning her in newspapers, scurrilous articles which left her defenseless and tortured. The shock of the scandal, she felt certain, had killed her mother and brother and all other blood relatives and had forced her husband to lose his position and to take his life.

Under the influence of the wires, machines and gas, she stated, she experienced hot flashes and dizziness. Consequently she wet her face and hair and held cold metals in her hands thinking that she could thus "draw the flashes away from her head." She said that at Kings County Hospital an anesthetic was administered to her in preparation for a "third degree" because of slurs she had



cast upon the Jewish race. This anesthetic, she stated, made her lose control of her thoughts and tongue. She felt that she might, therefore, have said things there that she could not be held accountable for, things that were not so. She insisted, however, that it was true that the food was poisoned.

Auditory hallucinations continued active. The patient stated that she was in constant communication "by mind reading" with R. M., a nurse at Kings County Hospital, who, she insisted, was also a doctor of criminology, a Federal agent. R. M., she further stated, kept her well informed of all happenings. The patient received the messages, she said, by lowering her tongue; by elevating her tongue she sent messages out; by placing her tongue between her teeth she sometimes could stop all transmission of telepathy. She gave a sincere demonstration of her ability to communicate thus. She insisted that people who had watched her were still making comments about her. She believed firmly that she had gonorrhea, syphilis, cancer of the stomach and lungs, "every disease under the sun." Hot flashes and dizzy spells continued. She felt that anesthetics were still given her in order to facilitate examination as to her mental condition.

When not replying to questions, the patient sat absorbed. Her delusional ideas were offered with very little emotional reaction. Occasionally she manifested a mildly suspicious affect, exclaiming, "Is this going to the newspapers?" Once she wept briefly and said that she was sad because her mother and brother were dead. On the whole, however, dull apathy was outstanding.

She placed full credence in the reality of her delusional ideas. Nevertheless she believed too that she had suffered a change, that there was something radically wrong with her head and that she was in need of treatment. She said that she very much wanted to get well, to clear the charges against her and then to find employment. Orientation, memory, retention and recall, counting and calculation, reading and writing, school and general knowledge, all were good.

March 12 to March 25. She was up and about the ward and her appetite and sleep were improving. Gradually she showed increasing interest and cooperation. However she continued retarded, se-

clusive, absorbed, without spontaneity and with reluctance to discuss herself. She stated that she still felt guilty because of the illegality of her continuing to receive the pension, and because of any derogatory statements she had made against the Jewish race, for which statements she asked that her apologies be accepted.

The idea that she had numerous diseases continued into the third week of March, when she gave it up entirely. At this time she still experienced dizziness and nausea and occasional spells of faintness when she would fall gently to the floor. These symptoms she attributed variously to "change of life" and to mysterious external influences which worked on her during the night. She was made to feel, she stated, a "funny feeling about my heart, like something dropping," and she believed herself then to be dying. Just how or why or by whom this was done she could not say. She revealed however that such a train of symptoms once followed immediately after she had said "hocus-pocus." She said that she felt "awfully sick" and that she feared further repetition of such "spells."

She was still actively hallucinated, "in constant communication with R. M." She stated too that she was receiving messages by "mental telepathy" from various psychiatrists and that she obtained any desired information in this manner. She did not have to use her vocal cords in order to reply, she said. Merely by placing her tongue in the lower part of her mouth she sent her answers to the "psychiatrists" and others.

They had told her while she was at Kings County Hospital, she said, that her mother, brother, husband and all other relatives were dead. She now believed that her mother alone was dead. As for her husband, she insisted that he was not her husband, that she had never had sexual relations with him, and that if the marriage had taken place it was illegal.

On March 25 A. L. was received on the insulin ward, the transfer note giving her condition as unimproved. She was untidy, neglectful of self and had to be urged to eat. She appeared retarded, depressed and exhausted and she sat apart quietly about the ward. Except for occasional periods when she very doggedly and in a surly manner persisted in demands that this, that or the other be given her at once she remained absorbed and almost totally mute.

During the night of March 27 she slept fitfully and kept announcing that germs were present in her bed.

Insulin therapy was started on the following day. The patient went into coma at 10:40 a. m. of the sixth day of treatment after receiving 40 units of insulin. During the sixth coma, which occurred on April 14 with 50 units, she suffered a convulsive attack and hypoglycemia was terminated by intravenous glucose.

On April 15, 60 units of insulin were given at 7 a. m. She entered coma at 10 a. m. Termination was attempted at 11:15 by gavage but the patient did not respond. At 11:50 adrenalin and intravenous glucose were given without noticeable effect. At 1:30 p. m. she was exceedingly restless, breathing heavily. Temperature reached 103 and pulse 120, weak and irregular. Spinal puncture was done at 2:10 and blood was drawn for laboratory tests. Spinal fluid pressure was normal and sugar content was 67 mgm. Blood sugar content was 222 mgm. and  $\text{CO}_2$  combining power 42.7 volumes per 100. All other findings were normal.

At 3 o'clock temperature was 103.8, pulse still irregular and blood pressure 114/60. At 4:45 the patient was sleeping quietly. Her fever began a gradual decline, temperature reaching normal in 14 hours. She emerged from coma at 8:30.

April 16. The patient appeared to show a mild state of organic confusion, with dysarthria prominent. There was complete amnesia for the entire psychosis.

April 17. Speech was still indistinct, mumbled, difficult, interrupted by frequent, prolonged yawning. There was gross impairment of ability to recall dates and sequences. Amnesia for the period starting with the acute onset of the psychosis was still extensive. She was certain that she had not the slightest conception of what an oscillograph might be. To the majority of statements relating to the psychotic content she replied rather grimly, "I really think that's a lot of nonsense," "I really don't remember anything about it," and "I really don't think you should ask me about these things. I really don't think it advisable. I might get sick again."

Spontaneously then she said, "My mind is much better than it was a few days ago. I think it still has a little trouble. I can't tell yet. I very much want to get better."

April 18. She was able to sit up in bed and was eating with good appetite, was very pleasant and cheerful, smiling, polite and appreciative. She said that she had been very sick, asked for explanation of her behavior and frequently expressed a fervent hope to get entirely well.

April 19. She volunteered that she suffered severe headache and that her memory was still faulty. Recall of parts of the psychosis, however, was now evident. It was queer, she stated, that the government should carry out so many things against her. She affirmed, nevertheless, her statements concerning the wires and machines, about her having been visited by a gas-administering, brain-examining criminologist. She still insisted that the landlord had operated a dictaphone, that he was on the government payroll, an aide to the "G men," and that she had been the subject of considerable and unjust spying, signaling, scandal and persecution. She insisted too that she could receive and transmit messages by tongue action, that "psychiatrists" thus gave her all sorts of information, that such communication was entirely normal and that it was being carried on also by all about her. But now, when asked to demonstrate transmission of thought she stated, after several attempts, that this power had apparently become lost to her.

April 20. With impairment of memory still apparent the psychosis increasingly came to light again, but now with flashes of insight which soon noticeably weakened the structure of the delusional trend.

She said that she had felt excessively nervous and irritable for the 10 days preceding her hospitalization because "G men" occupied her home. Each day, she was certain, she saw them enter the house and they would then follow her activities closely. Men and women, she insisted, trailed her to the stores, watched carefully every purchase she made and, "from what I could gather," made similar purchases. "It doesn't seem very sensible unless it was all arranged by the government. Apparently it was."

For these 10 days she slept very poorly. She could hear, she said, the "G men" walking constantly back and forth in the apartment above, carefully following her movements from room to room. "At least it appeared that way but I can't really explain that."

She felt certain that people across the street signaled to one another by use of shades and lights. "That's what I noticed about it."

All the wires were installed in the house, I guess by someone belonging to the Federal government. They were very thin, fine little wires, connected at the stairs there and led down into the cellar. I noticed them outside my door. I think that's about all there was to that.

Sunday night, February 24, I noticed that some kind of a light was lit. They installed a light in the house and it was on Tuesday night that it took effect. At midnight I noticed that the light appeared under the mirror and I noticed it all night long, a round light and that was the starting of it. And then the light lit and it was very bright. Let me see. It was a very bright light. And then it lit. There isn't very much to the story. I think I looked at the light a couple of times. I noticed it was very bright. That's about all I observed about it. There's really not very much to it. After the light went out that's all there was really to it. The light appeared on the wall. It's queer that that light should appear. It stayed quite a while and I looked at it and I paid no attention to it after a while and that continued up till Friday, February 24, when the spell took effect on me.

My mother called me from the bed room and I didn't go. The psychiatrist told me to continue sitting where I was. She was ordering me what to do. She ordered me to take a bath and I did and no sooner did I do so than I took the spell. The hot water, I guess, took effect on my head. The psychiatrist was a woman. I saw her in the house. I don't know who she was. I had never seen her before. The psychiatrist was Mrs. K. I believe she works at Kings County Hospital. The psychiatrist told me to continue brushing my hair and, after I did, then I lifted a cold metal pot and the contact of that, I thought, had some effect on my head. And then I put my hands under the cold water. That seemed to give me a little relief. I guess that's about all to that spell.

The criminologist came at night. He was really upstairs in the apartment above and he was administering gas to me downstairs and of course it didn't knock me out completely. I opened the window and that's about all there was to that. I suppose he had to do that. There must have been something to it. I have a terrible headache. He must have come for some reason. He must have been sent by the government. He was a criminologist. There's no doubt about it. I am positive he was a criminologist. He said he was a criminologist and he watched everything that happened. I heard a noise in the gas stove and I could smell the gas. Why he gave me gas I don't know. I am sure he gave me gas.



Sunday night, February 24, it started and it has been going on up until the present time. But I don't feel the effects of it now. Apparently it's ended. I haven't felt it the last few days. It is a spell as I call it. The morning that it happened I had such terrific pains in my head. The psychiatrist was my mother.

A nurse, she advised me that an ambulance was ready. I said good bye to my mother. I thought that by leaving her she would die but I didn't want her to die. And then I was taken in a police wagon to Kings County Hospital. And of course when I arrived there I went through some treatments. I really don't remember very much about that night. I should think that's about all. You see, after I arrived at Kings County Hospital, there wasn't any more to it. That was a dead issue then. And then they told me I had all kinds of things, cancer and all sorts of things which of course I believe now was untrue. They told me any number of things at that time. The criminologist was talking continuously. It wasn't my imaginary ideas. It was the criminologist and the psychiatrists that gave them to me. I can't understand why people say things like that when they are not true. I think that covers everything. I can't really remember any more now. I think that's about all. I felt very weak and all in.

Here I went through several experiences. I was there about one week. I went through all kinds of treatments. I remember going through the electric chair and just sitting there. I thought the charge nurse was one of the government employees. I believe she was. She is supposed to be. She told me so herself. I really can't remember anything more. So much did happen that I really can't remember it.

The treatments that I went through that week are very hazy to me just at the present. But I know that I was supposed to contact Mr. Hoover and Father K. and Mrs. O. and, see, that was like in my raving, I was appealing to these people to help me. Now I think that finishes the first night. Of course everything seems to me to be hazy in my mind. I carried on terribly. A voice told me my mother was dead and I believed it. I can't really remember. I felt a terrible feeling around my heart and thought I was being treated for my heart. The voice seemed to tell me I had gas bags around my heart. I was very sick for two nights but I can't remember anything about it. That's about all and the following Saturday I was transferred to Kings Park.

Well, of course, you have everything down for here. Here they said I had any number of diseases and of course at that time I believed all those things when I entered Kings County Hospital. I remember asking the doc-



tor if he was a reporter. Someone was working on my head and I felt it was a reporter.

The first week here my mind wasn't very clear at that time and I had to go through some kind of an experience, I call it, which rather upset me, but I finally managed to get over it. They were trying to show me that I didn't treat my mother right at home. They didn't realize that she was dead weight and that I couldn't do it. It was too much work for me. They perhaps looked at it in a different light, the psychiatrists. Here I didn't understand what anyone said to me. Everything seemed to be the opposite to what was said. I was thinking all the time about things when I was small. Then I was finally transferred over to here.

And I suppose the next thing would be to speak of the treatment. I was given injections (insulin) which took effect upon me. I would wake up around noon in time for lunch. I was able to eat my dinner. And in the afternoon I would get up and sit around in a chair. I guess that's about all there is to that. That went on for several days. Well, here I am now.

My head isn't very clear. Do you think that my head will be perfectly clear when I leave here, that there will be no oscillographs or nothing like that? The oscillographs have all been taken out of my head, haven't they, doctor? They haven't bothered me. I read an article in a paper a few days before I took sick that it was a recording machine. I really can't remember now. I noticed that everything I read that I could hear the voices and I knew that my voice was being carried some place else. I believe it was. That's the truth. The oscillographs recorded everything I did.

The morning of February 24 I really felt very peculiar in my head. I had to keep sitting down. I understood from the psychiatrists that the government was bringing the spell on. Just what the object was I really can't say. I certainly had a very peculiar spell and I will say that I was temporarily insane at that time. It lasted from February 14 up until April 15. In order for me to clear my mind I will simply have to forget the fact that they were watching me for 10 days.

She now felt that there was nothing at all wrong in her having received the pension while married, that she had done nothing for which she might expect punishment, that she had at no time been persecuted by the government. Many other amnesic gaps appeared. She still insisted that she could receive messages but on failing in her attempts stated, "I'd have to get someone to give me the messages."

The psychosis now began again to show gross recession from consciousness. Its repeated description, offered spontaneously or on request, quickly lost more and more detail and soon was given in a more or less stereotyped manner.

From February 14 up to the 24th I was of the opinion each time I left the house to go shopping that I was followed by government agents, men and women. As I reached my shopping center I noticed that these people would go into the same stores where I was purchasing food. They also seemed to be buying and observing exactly what I bought.

This condition got on my nerves. On February 24 my climax seemed to be reached as I was advised by a voice to take a hot bath, which I immediately obeyed, and after touching the hot water it seemed to take effect upon my head. Suddenly I heard the voice again telling me I was to get hot flashes in my head and in order to prevent this I should brush my hair on whatever side seemed to be appearing red at that moment.

A nurse then appeared who said she had an ambulance ready and she was to take me to the hospital. I said good bye to my mother and friends, put on a dress, coat, hat and left immediately for Kings County Hospital.

There I registered and was examined by a doctor and then assigned to a ward. I was only one week in Kings County Hospital. I heard a continued voice morning, noon and night. During this week I underwent a certain treatment and was supposed to have communicated with several people which I have since learned in my sane moments never happened and I really never communicated with anyone, only the voice which I had heard all along. On the following Saturday I was transferred to Kings Park.

The first three weeks at this hospital I heard this continued voice. Also I was of the opinion I was receiving treatment on my head.

It seems to me now that everything I did wrong at home was explained in such a way as to demonstrate just what took place and the exact wrong I did in taking care of my mother.

After three weeks I started receiving insulin treatment which lasted until April 15. The twelfth treatment lasted for 10 hours and put me in a coma which I finally came out of. I am of the opinion that this coma brought my senses back and started me on the road to recovery.

Amnesia for the episode when she asked the grocer to divide the purchases has remained persistent. Repression of her idea of persecution by the Federal government was almost complete. Repeatedly, when questioned concerning this, she showed genuine surprise, exclaiming, "I was never persecuted. Did I at some time

say I was persecuted? Of course they really didn't persecute me. That would have been an awful statement for me to have made. It's certain then I wasn't sane."

Except for these repressions and despite the absence of the psychosis from the field of consciousness due to suppression, all other details of the trend were clearly recalled when brought up during subsequent interviews.

The patient herself began to cast doubts upon the veracity of her statements.

As far as I know they used an oscillograph on me but I might be mistaken . . . Whether a dictaphone was actually in the apartment upstairs or not I don't know, I wasn't there . . . I did feel the effects of something. I couldn't say what it was, gas or not. I really heard the gas stove move but I could be mistaken . . . People across the street appeared to be signaling. It is possible I was wrong . . . There might not have been a scandal in the papers about me. The psychiatrists told me there was. But I didn't read the news . . . I was taking the psychiatrist's word for granted that he was a criminologist. That's so as far as I know. I couldn't swear he was.

April 27. The landlord was not on the government payroll. That's an error on my part . . . It's not normal to hear voices. Something must have been radically wrong with me . . . I know now that I can't read other people's minds. That's foolish . . . The wires had nothing absolutely to do with me. No sane person would believe in such things. I must have been mistaken about the signals. I was so sensitive at the time that I observed such things and thought they were all meant for me and of course I realize now that I said so many ridiculous, fantastic things. It was all my imagination, insane impressions, I can understand. The whole thing seems to me now to be a dream and I want to forget about it and not talk about it, that is, except with you so that I can get it all clear. I might as well face it. Of course my mind was working in the wrong way. I was completely gone, completely out of my mind. I am so grateful and thankful that I have found myself. I really wouldn't want to live if I had to go through that state again. I think the coma did wonders for me.

The patient was paroled May 18, 1938, with the diagnosis dementia præcox, paranoid type—condition, recovered. She left the hospital, eager to adjust the matter of her having illegally received the pension from the Federal government.

## DISCUSSION

Since 1932, A. L. had been trying futilely to obtain employment as an escape from the necessity of nursing her mother, to cut the shackles which forced on her the unalluring responsibilities of distasteful domestic routine.

With an eye to her own future security she married, contrary to her mother's wishes, a man divorced and of colored blood.

Following her father's death, which was the first serious acute shock the patient had sustained, the burden of nursing the mother, and the household duties, fell increasingly upon her shoulders. At this time the only means of support was the government pension and a small contribution by the boarder, who became her husband.

The latter occasionally spoke to her concerning the illegality of continuing to receive the pension but at all times she turned furiously on him, insisting that she was under the primary necessity of supporting her mother.

Nevertheless the patient's conscience troubled her severely and she was constantly fearful that her deception would be uncovered and that she would be punished, not only by the government, but just as seriously by the mother who would then also become aware of the undesirable union.

It was this feeling of guilt and the fear of punishment, it is believed, which were of the greatest importance in the etiology of the psychosis. The patient had involved herself in a situation. The psychosis, with many of its conflicts openly on the surface and of a guilt and wish-fulfilling type, was in reaction to this situation.

It will be remembered that the first symptoms appeared almost immediately after the mother had become totally helpless. That there was an unconscious hostility toward the mother seems apparent from the exaggerated reaction and solicitude shown at the time of the latter's fall, the delusional idea that the mother was dead, and in that this idea was not dispelled for some time after the patient had gained insight into the fact that others she had believed dead were not really dead. It will be remembered, too, that one of the first abnormalities noted was the request to the grocer that her purchase be divided—a symbolic interruption of her burdensome

duties and a desire to avoid the mother's wrath should the latter become aware of the marriage.

The husband she had believed a suicide, a wishfulfilling delusion, for in this way too there would be no cause to fear either the government or the mother. The delusion that she herself was dead was a death wish to escape the reality of the disagreeable situation.

The ideas concerning the Federal government and the associated system of delusions and hallucinations issued from a paranoid self-accusatory mechanism, brought about by an increased affectivity and suggestibility relating to the guilt ideas.

Why did the patient make a full recovery? In looking backward at her personality makeup we find that she was not seriously lacking in ability to make contacts with the external world. True, it was a schizoid type of makeup but not one to be labeled typically shut-in, or too obviously inadequate. True, there was an element of latent homosexuality, but not one strong enough to interfere dangerously with heterosexual adaptation.

There appears, instead, a personality well enough harmonized that the break in compensation did not come until the age of 40. Further, it came on acutely, in very obvious reaction to a set of difficult external influences.

The threat to self involved in the coma undoubtedly hastened recovery. Then, too, she emerged from the coma with auditory hallucinations silenced and complete amnesia for the psychosis. As her memory returned she found herself in an environment not at all hostile but, to the contrary, making every effort to be friendly and helpful. Assurances that she was mistaken in her ideas were not strongly resisted, then were quickly accepted as insight from within took full control and complete mental recovery followed.

It is entirely probable that recovery would have resulted without insulin therapy, although over a more extended period. With removal from the inimical environment to Kings County Hospital "there wasn't any more to it. That was a dead issue then."

This, then, was a situational psychosis, situational in the sense that the symptomatology was largely understandable as a product of psychological reaction to causes largely external. Moreover, as



has already been stated, the outcome in cases such as this is generally favorable.

But it should not be supposed that situational schizophrenias always end in recovery. Nor should it be inferred that such situational psychoses may be precisely differentiated from deteriorating dementia præcox. The vast majority of the latter are also situational psychoses. There may be here an apparent absence of emotional situations, of exciting causes, but such causes are nevertheless usually present and ascertainable upon close review of the anamnesis or psychoanalytic study of the patient.

Where the endogenous structure is more unfavorable, the constitutional bias toward dementia præcox stronger; where the distressing situation is of an unalterable and wholly unacceptable nature; where the conflicts result from causes less obvious, from hidden, inner difficulties; where they become too deeply repressed, distorted, opaque; where there is a "tendency to turn on definite complexes . . . in spheres which are difficult to reach for an adjustment"; where there occurs a secondary fixation of the affective reaction through a resultant outcropping of a "will to sickness"—there the desire for complete irresponsibility leads to a different outcome, toward malignancy and deterioration.



## ACUTE HETEROSEXUAL INADEQUACY

### I. *In the Male*

BY JANE E. OLTMAN, M. D., AND SAMUEL FRIEDMAN, M. D.\*

The condition of acute homosexual panic in the male has long been recognized and has received detailed study from both the symptomatic and the dynamic viewpoints. Kempf<sup>1</sup> gives an excellent discussion of this not infrequently encountered psychiatric phenomenon. On the other hand, comparatively little mention has been made of a closely related phenomenon which we have called acute heterosexual inadequacy, or acute heterosexual panic or failure. Kempf affirms that "the tendency to homosexuality surely in males has a dual termination. Not only are homosexual associations attractive but there is an insurmountable affective (fear) resistance to heterosexual potency which becomes aroused by the amorous approach of the female . . . anxiety and depression may develop rapidly after a heterosexual failure in this type of male."

It is probable that anxiety attacks of a minor degree or other relatively mild psychiatric disorders arising from acute heterosexual inadequacy are relatively common but do not come to the attention of a psychiatrist. Richardson,<sup>2</sup> for example, cites the case of a man who finally came for advice about a physical syndrome "which invariably appears when he goes through a love affair. Three times in his life he had fallen in love and became engaged and each time when the engagement was announced or plans made for marriage he was obliged to withdraw from the situation because of the development of a prolonged 'nervous breakdown' in which the outstanding symptoms were anxiety with muscular weakness, dizziness, lack of concentration, nocturnal emissions, indecisions, terrifying dreams, headaches and anorexia." Richardson points out that the individual, as well as his siblings, had been "allowed but few opportunities to come in contact with the normal activities of boys and girls of their own ages . . . they were made exceptionally dependent upon their mother in all things, and especially in their human relationships . . . In his adult difficulties this patient was unable to break away from the nonlogical habit patterns of thought that had been made for him by the hypermoral and

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overemotional attitudes of his father . . . In each love affair the sexual stimulation brought about by the contacts with a woman released these old associations from the unawareness and influenced his conduct in such a way as to prohibit him from continuing this relationship. The censorship implied in the father-made attitudes which had not been brought to full practical maturation in the adult conscious world of reality produced in him prohibitions, inhibitions, and incapacities in his later life."

The role of this condition as a causative factor in the psychoses of young adult males is probably much greater than is generally appreciated. Unfortunately the family may be actually unaware of a love affair or the patient may be unable to bring himself to a discussion of his psychosexual difficulties and so, frequently, this factor will be overlooked in a casual anamnesis or study of a case. Our interest in this condition was stimulated by its appearance in well-defined form in several patients recently studied by us, resulting in this inquiry into the clinical manifestations as well as, to some degree, their dynamic substance. The following abbreviated case histories are illustrative of the general pattern of these cases.

#### ILLUSTRATIVE CASE MATERIAL

Case 1: B. F., 34 years old, single, a clerk. His family history indicates that his mother experienced two "breakdowns" and was an extremely tense, neurotic individual. As a child the patient was nervous and suffered from nightmares and somnambulism. In later boyhood he was very close to his family and was a marked favorite of his mother, whose devotion he reciprocated. He was rather overconcerned about his bodily health, was very shy, "sissified," and a "better boy than the average." His sexual history indicated that he had masturbated since puberty, and at 20 was so concerned about this practice that a circumcision was performed. The operation was said to have relieved him for three months and then the urge returned. He was always shy with the opposite sex and believed that extramarital relations were not to be condoned. For the past six years he had kept company with a girl of whom he seemed quite fond and whom he apparently desired to marry. However, she had postponed marriage for financial reasons.

About six months before his admission to the hospital he tried to force the issue of their marriage and at the same time attempted sexual intimacy. Thereafter he developed marked guilt reactions concerning the incident. He labored under the delusion that he had injured the girl severely and had caused her to develop a rupture. He expressed the belief that she was married to another man and was pregnant, and he worried for fear he might be blamed for her pregnancy. He became anxious, tense, depressed, complained of bodily distress, was unable to concentrate on his work, and so was hospitalized. In the hospital he continued to display a childish, dependent, apathetic, withdrawn and depressed attitude. He gave voice to his conflicts over his sexuality and to his feelings of inadequacy in this field. He was convinced that he would never be able to marry, and that he was not a complete man. He experienced extreme guilt concerning his masturbation and his attempted heterosexual intimacy, and his remorse over the latter incident was so fixed that he felt there was nothing left for him but to die. He voluntarily stated that he was always fonder of his mother than of his father and had always tried to find a girl as much like his mother as possible.

Case 2. G. T., 28 years old, single, a machinist. In his earlier life he had never measured up to his two siblings scholastically and had been chided by his parents on this score. Paternal dominance was rather marked. He was a shy, serious, hard-working individual. He had been keeping company with a girl for almost three years, and about six months prior to his hospitalization they became engaged, although the marriage was deferred for about a year by mutual agreement.

Thereafter the patient did not seem to be his usual self. About two months after the engagement was announced he broke an appointment with his fiancée and, instead, went alone to a moving picture. He observed the man seated next to him fingering his wedding ring, an act which seemed to bear some definite significance with respect to himself. As he gazed about the theater he felt that people were staring at him and thinking of him "in bad terms." That night he was depressed, slept poorly, and the following morning drank iodine with suicidal intent.

In the hospital he was bewildered, tense, rather depressed, and apparently hallucinated in the auditory sphere. Guilt reactions concerning masturbation in adolescence were expressed. He affirmed that he had experienced relations with his fiancée several months previously (this was delusional) and dated his illness from this event. He expressed the belief that he was married to her and wished to rejoin his "wife." During his earlier hospital residence this was a persistent delusion. One day he inquired if a small boy on the ward were his son. Depression, as well as extreme bewilderment, was in evidence. He gave voice to death wishes, ideas of unworthiness and feelings that his body was unnatural.

Case 3. J. H., 33 years old, married, a minister. The family history revealed that his mother had experienced several psychotic episodes and one brother had also suffered a "mental breakdown." As a youth he learned his father's trade, masonry, but later studied for the ministry. In earlier life he was shy, reserved, and rather asocial, but later he seemed to have overcome these traits satisfactorily. His sexual history revealed that he had masturbated since early youth. Apparently unsatisfactory heterosexual relations were experienced on several occasions, and thereafter he suffered definite qualms and guilt reactions possibly accentuated by his religious training. On a few occasions he was unsuccessfully approached by homosexual individuals.

For about six months prior to his hospitalization he had been greatly interested in the subject of marriage, preaching about it frequently in his sermons. After his fiancée, with whom he had been acquainted for about four months, accepted his proposal of marriage, he seemed excessively worried and tense. He was restless and forgetful for a number of days prior to his wedding. Within a few days after the marriage he became excited, agitated and incoherent in speech, and he was admitted to the hospital 10 days after the ceremony.

Extreme agitation, restlessness, and assaultiveness were in evidence at first but these phenomena subsided rapidly and thereafter the patient was in good contact. He revealed that he had worried about his first intercourse with his wife. He feared that he had been too hasty and that he might have injured her, as she had once

suffered a dislocated hip. In addition, her menses had begun within a few days and this had disturbed him. During his excited period in the hospital, he was in great fear of sexual assault from other males.

Case 4. L. L., 21 years old, single, a shoemaker. He was a rather shy person, devoted to his family and very religious. For some eight months he had been interested in a girl and had been teased by his friends about this relationship. At times, it was somewhat jokingly inferred that her reputation was questionable, and once the patient had tried to reassure himself on the question of her virginity. This sexual intimacy was resented by the girl. The patient began to brood excessively over this incident; he became restless and excited and had to stop work. He expressed a strong desire to make reparation for his act and threatened to destroy himself unless this could be accomplished.

In the hospital he passed through alternating periods of excitement and mild stupor. At times he appeared to be in a religious ecstasy and sang hymns. He berated himself for having made love to his girl that night and expressed the fear that his friends had accused him of seducing her and intended to force marriage upon him. Fear of homosexual assault was present. He believed that his blood was to be drained and transferred to other patients in order to hasten their recovery. Similarly, he spoke of losing "white blood" and simultaneously expressed guilt over masturbation. He persistently affirmed his desire to make amends for the wrong he had done to his girl.

Case 5. P. E., 19 years old, single, an unemployed male. Two years previously he had been the recipient of a scholarship to college, but after two weeks he had returned home presumably because of homesickness. He was characterized as a shy, hard-working, conscientious, "very good" boy. There was great mutual devotion between the boy and his mother and his older sisters, one of whom was especially possessive of him. His sexual history included masturbation during the past six years.

A few months prior to admission to the hospital he became rather interested in a girl. The details of this relationship were never very clearly defined but soon thereafter the patient became



depressed, apathetic and rather tense. He slept poorly, masturbated excessively, gave voice to nihilistic ideas and finally, after having walked nude into his sister's room and attempted intercourse with her, he was hospitalized. He was bewildered, depressed, seclusive, apathetic and hallucinated in the auditory sphere. Incestuous strivings were expressed on a conscious level. He indicated his great love for his mother and frankly admitted his desire for sexual relations with her. He pointed out his own sexual inadequacy and his marked inferiority to his father in this sphere. He reiterated a strong desire to get married or to have sexual relations and on one occasion expressed the obviously wish-fulfilling delusion, "I must have had intercourse with many different women."

There is a number of interesting features common to all of these cases. One sees, typically, the background of a shy, asocial adolescence in which the individual is closely devoted to the family circle and especially to the mother. Ordinary social intercourse with the opposite sex has been greatly curtailed. Overstrict religious training may or may not be a complicating factor. Finally, some friendship with a girl is established, possibly amounting to little more, save in the patient's mind, than a casual intimacy, or actually reaching the stage of formal engagement and approaching marriage. The term, acute heterosexual inadequacy, does not necessarily imply that the individual has unsuccessfully attempted actual physical relations. The inadequacy is primarily psychogenic. The individual's heterosexual failure with its resultant panic is based on certain dynamic factors which are readily apparent in the cases under discussion.

Fundamentally, one sees an individual with more or less openly pronounced mother fixation, who has never freed himself from the Oedipus situation, and one who in adult life is unable to liberate himself from the incestuous implications of any heterosexual relation. The first more than casual friendship with a girl may be sufficient to precipitate a heterosexual panic, or on the other hand, this may be deferred until actual sexual intimacy or intercourse is attempted. Rarely, as in Case 3, physical relations may have been more or less successfully indulged in, but psychologically the individual is entirely unable to assume the burden. Usually any seri-



ous thought of, or abortive attempt at heterosexual relations is repulsive to the individual's superego and suffices to throw him into an acute anxiety state or a psychotic episode. The patient himself does not, of course, consciously appreciate the reasons for his rejection of heterosexuality, and even to the psychiatrist these may not be readily apparent. Only rarely are frank incestuous strivings as patently expressed as they were by Case 5, but the inference to be drawn from B. F.'s (Case 1) desire "to find a girl as much like his mother as possible" is equally clear. Superficially the patient may attempt to paraphrase his guilt over his deeply subconscious incestuous strivings to the more readily apparent but comparable guilt over masturbation.

Parallel with the guilt reactions evoked by the incestuous implication of any sexual attempt may be seen, more clearly, the bitter feelings of inadequacy experienced by the male who finds himself impotent, either physically or psychologically. It is apparent that the psychosis serves in some measure as an escape mechanism from these disturbing thoughts, as in the psychosis the individual may give free rein to obviously wish-fulfilling delusions by which he tries to establish his potency. Thus paramount among the delusions expressed by these patients are beliefs which, if true, would impart to them a sexual adequacy in which they were actually so woefully lacking. B. F. (Case 1), for example, expressed the delusion that his fiancée was pregnant and that he would be censured for her condition. Obviously, her impregnation by him would establish his sexual potency, and the patient clings dearly to this fancied prop to his masculinity. It is apparent also that whatever social stigma might be connected with this is readily accepted by the patient as it is less crushing to his pride than is the far more fundamental blow of sexual inadequacy. G. T., (Case 2) believed that he was already married and desired to rejoin his wife. He made an unsupported affirmation that he had experienced sexual relations with his fiancée. By his acceptance of these beliefs as *faits accomplis* he attempts to negate his sexual inadequacy. In like vein is his inquiry whether the young boy on the ward is his son. L. L. (Case 4) is similarly successful through his delusion that he is being accused of seducing his girl. P. E. (Case 5) struggles weakly

and his wish-fulfilling material varies from his expression of a desire to get married to a vaguely hopeful "I must have had intercourse with many different women."

Thus there may be seen on the one hand the tremendous resistance to heterosexual potency imposed by its incestuous implications and on the other, a rival struggle to establish this very potency, at least in the psychological sphere, and thereby to overcome the stigma of impotence. Obviously, the resultant of these two opposing factors can be no less than unsatisfactory. As indicated, the relatively mild disturbances arising from this conflict may not come to the attention of a psychiatrist. The individual may resolve his struggle by resigning himself to bachelorhood, or, after several attempts, he may finally make a fairly successful adjustment under the stimulus of a woman psychologically appropriate for him. The more active disturbance, however, is seen by the psychiatrist as the condition we have termed acute heterosexual inadequacy or panic. Symptomatically, it may bear much resemblance to the well-recognized homosexual panic. The patient is anxious, tense, restless, frequently depressed, or, more characteristically, bewildered. Suicidal intentions may be apparent. General ideas of guilt or of inferiority, especially in the sexual sphere, are frequently expressed.

As noted previously, the factors leading to the development of strong latent homosexuality are present in the backgrounds of these individuals no less than in those who succumb to the usual homosexual panic, but it is apparent that the immediately precipitating factor or milieu for the onset of this psychosis differs from that associated with the homosexual panic. The typical homosexual panic as illustrated in the following brief summary may be contrasted with the preceding cases:

W. O. 25 years old, single, a laborer, had obtained a position in a lumber camp where, however, he remained only one week. The first night he was placed in a double bunk with another man who, according to the patient's account, attempted pederasty on him. He began to think that the "gang" was attempting to make a sodomist of him, and asserted that the rest of the group who were not members of the gang were trying to "ride" him. He could

taste and smell something strange in his food. On his return home he feared that someone would blow up the house with dynamite; he kept a loaded gun for protection and was afraid to venture out of doors.

Here one sees the usual sequence of a homosexual panic: the contiguity with a group of men, the true or phantasied homosexual attack, the struggle with perverse cravings and the flight from them. On the other hand, in the acute heterosexual failure the stimulus for the panic is provided in large measure by the intimacy with a girl and the thought of imminent heterosexual relations, the implications of which render the individual utterly incapable of attaining the goal. In both cases the individual is nailed to the cross of his superego. It would seem, however, that the individual who finally succumbs to acute heterosexual failure is possessed of a somewhat more advanced psychosexual development. Presumably, he has been able successfully to subdue homosexual situations and conflicts which must inevitably have arisen previously in his life, succumbing only when the spectre of incestuous strivings and his resultant biological inadequacy loom in his path.

However, one cannot overlook the patently homosexual features present in many of these cases. L. L. (Case 4), for example, was in fear of homosexual assault. He indicated that his blood was being drained and transferred to other patients. During the acute phase of his psychosis, J. H. (Case 3) felt that he was nude and being assaulted by every passerby. The two conditions, that is, homosexual panic and acute heterosexual failure, may indeed appear in the same individual under different stimuli or varying circumstances. We have had one case in which the patient was able to make an apparently successful heterosexual adjustment with an older, married woman; two years later he passed through a fairly acute phase of heterosexual inadequacy and shortly thereafter, while in prison for a crime committed during his psychosis, he developed a typical, acute homosexual panic which disappeared fairly rapidly after his transfer to the hospital.

One sees, then, that acute heterosexual inadequacy and the homosexual panic are branches of the same tree and spring from roots common to biologically inadequate males. In the individual suc-

cumbing to acute homosexual panic, however, perverse sexual cravings are more active and closer to consciousness; while in the other, the desire to reach a heterosexual level may be stronger but comes to ruin when the opportunity is offered. The clinical symptoms, consisting of panic and its concomitant features, may be very similar in both cases. Nevertheless, the typical antecedent history, which may include engagement and approaching marriage, and the characteristic wish-fulfilling type of delusional material readily distinguish the acute heterosexual panic.

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## THE PROGNOSTIC POSSIBILITIES OF THE RORSCHACH METHOD IN INSULIN TREATMENT

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The purpose of this communication is to report certain differences among the pretreatment Rorschach records of schizophrenics who at the completion of insulin therapy were classified as recovered, much improved or unimproved. The ultimate aim of this investigation, which is being continued\*\* is to determine to what extent the Rorschach method can be utilized as an instrument of prognosis, not only in the case of schizophrenics to be treated with insulin but perhaps in all schizophrenic patients.

The experimental material of the Rorschach method consists of 10 meaningless inkblots which are presented to the patient in a prescribed order, one at a time. The patient is asked to say what he thinks these inkblots might represent. The most complete description of the Rorschach technique is found in Rorschach's own monograph; there are also other descriptions and discussions of the technique.<sup>1</sup> The subjects of this study were schizophrenics who were about to undergo insulin treatment at the New York State Psychiatric Institute. I wish to thank the staff of the institute and particularly Drs. Harris, Horwitz and Milch for their aid in carrying out this investigation. Drs. Horwitz and Milch classified the patients after treatment as recovered, much improved, improved or unimproved. The 25 patients reported upon at this time had a chronological age range of from 15½ to 36½ years. Thirteen of them were male and 12 were female.

### RESULTS

Those experimental results which lend themselves to tabulation can be found in Table 1. Nearly all our conclusions are based on information contained in that table. Since the degree of improvement of a patient observed clinically cannot be estimated with perfect reliability, it was deemed advisable to compare only the ex-

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TABLE 1

No.	Age	Sex	Resp.	T/R	W	D	d	S	M	FM	m	K	F	c	FC	CF	C	Cn	F+%	a%
MUCH IMPROVED AND RECOVERED																				
1.	33	F	32	.68	13	18	1	0	5	4	0	1	16	2	2	2	0	0	74	31
2.	28½	F	8	2.10	3	5	0	0	0	0	0	0	6	0	1	1	0	0	50	0
3.	28	F	24	1.16	1	21	2	0	0	2	0	1	18	2	0	1	0	0	87	71
4.	27½	M	26	1.38	19	7	0	0	3	3	3	0	4	5	5	3	0	0	80	54
5.	23	F	56	.64	11	26	16	3	6	2	6	2	29	4	2	2	3	0	70	18
6.	23	M	23	1.30	9	11	1	2	2	3	2	0	13	1	0	0	2	0	63	35
7.	22	M	12	1.30	5	7	0	0	2	3	0	0	4	1	0	1	1	0	75	50
8.	20½	M	15	1.13	7	7	0	1	1	1	0	0	10	2	0	1	0	0	85	67
9.	18½	F	17	1.29	7	8	2	0	1	1	1	1	7	0	1	1	1	3	60	24
10.	16½	M	12	1.00	5	5	2	0	0	0	2	0	7	2	0	0	0	1	73	33
Ave.	24.1		22.5	1.19	8.0	11.5	2.4	0.6	2.0	1.9	1.4	0.5	11.4	1.9	1.1	1.2	0.7	0.4	72	38
Per cent			100.0		35.6	51.1	10.7	2.6	8.9	8.4	6.2	2.3	50.7	8.4	4.9	5.3	3.1	1.8		
IMPROVED																				
11.	23	F	15	.60	9	6	0	0	0	0	0	0	8	4	0	3	0	0	42	13
12.	24½	F	17	.88	3	12	2	0	0	0	0	1	12	2	2	0	0	0	80	53
13.	22½	M	17	1.05	7	10	0	0	0	2	3	0	7	0	1	1	3	0	58	71
14.	27	M	30	1.70	1	21	7	1	1	3	3	1	18	0	3	1	0	0	80	40
15.	18	M	13	1.00	12	1	0	0	0	2	0	0	11	0	0	0	0	0	54	100
16.	17	M	15	.73	4	11	0	0	0	2	0	0	8	0	1	4	0	0	80	60
17.	15½	M	8	1.00	5	3	0	0	1	1	0	0	4	2	0	0	0	0	71	16
Ave.	21.1		16.4	.99	5.9	9.1	1.3	0.1	0.3	1.4	0.9	0.3	9.7	1.1	1.0	1.3	0.4	0.0	66	50
Per cent			100.0		35.6	55.7	7.8	0.9	1.7	8.7	5.2	1.7	59.1	7.0	6.2	7.8	2.6	0.0		
UNIMPROVED																				
18.	36½	F	15	3.00	2	8	4	1	0	2	1	0	9	1	1	1	0	0	69	40
19.	35	F	52	.98	2	27	21	2	0	2	4	0	43	2	1	0	0	0	73	58
20.	31½	F	17	1.47	7	10	0	0	0	1	0	1	7	3	4	1	0	0	83	71
21.	27	F	22	.90	3	13	6	0	0	0	0	1	17	1	1	0	1	1	37	27
22.	26	M	18	1.27	6	10	2	0	1	4	0	0	10	2	0	1	0	0	50	55
23.	16	F	11	1.90	8	3	0	0	0	0	0	0	10	0	0	1	0	0	20	18
24.	15½	M	50	.72	0	34	14	2	2	7	4	0	31	5	1	0	0	0	81	42
25.	15½	M	13	.92	8	5	0	0	0	0	0	0	1	0	0	0	2	10	..	8
Ave.	25.4		24.8	1.39	4.5	13.8	5.9	0.6	0.4	2.0	1.1	0.3	16.0	1.7	1.0	0.5	0.4	1.4	59	40
Per cent			100.0		18.2	55.6	23.7	2.5	1.5	8.2	4.5	1.0	64.5	7.1	4.0	2.0	1.5	5.6		
ALL PATIENTS																				
Ave.	23.6		21.5	1.20	6.3	11.5	3.2	0.5	1.0	1.8	1.2	0.4	12.4	1.6	1.0	1.0	0.5	0.6	66	42
Per cent			100.0		29.3	53.5	14.9	2.3	4.6	8.4	5.6	1.9	57.8	7.4	4.6	4.6	2.3	2.8		

treme groups, that is, the recovered and much improved groups on the one hand, and the unimproved group on the other. An inspection of Table 1 shows that these two groups do not differ appreciably with regard to average age or average number of inkblot interpretations. The averages for the unimproved group are slightly higher but this difference is of no significance. There is also no important difference in the average time per inkblot interpretation (indicated in the table by the sign T/R), both groups having an average which is much higher than that for the healthy adult of similar age and intelligence. The average is 1.19 minutes for the much improved and 1.39 minutes for the unimproved patients. However, it is important to note that the much improved group, which includes the recovered cases, gave longer and more elaborate responses. Practically all the unimproved patients limited themselves to monosyllabic or very short phrases while the much improved patients were much more productive; the latter associated freely around the forms and colors which they perceived in the inkblots. This greater freedom of association observed in practically all much improved patients explains why 8 out of the 10 much improved patients had an average time per response exceeding one minute whereas only one-half the unimproved patients needed such a long time to give their responses.

As far as those Rorschach factors which pertain more closely to the intellectual functions of the patient are concerned, we may point out that there is no difference in the percentage of the normal detail response (indicated in the table by D). A normal detail response is one referring to easily perceptible details of the inkblots, i. e., such details which are frequently selected for interpretation by normal adults. The percentage of this type of response does not appear to be of great differentiating value for it does not seem to vary from individual to individual to such an extent as the percentage or absolute number of the whole and rare detail responses (indicated in the table by W and d respectively). A whole interpretation is one covering the entire inkblot and a rare detail answer is one pertaining to details rarely interpreted by normal adults. The percentage as well as the average number of whole interpretations of the much improved group are twice those

of the unimproved group. The difference between the groups in question is even more marked when we investigate only the sharply perceived (i. e., good) whole interpretations. On separating the patients who gave three or more sharply perceived whole interpretations from those who gave less than three sharply perceived whole interpretations, we find that the former constitute the great majority of the much improved group and are less frequently found in the unimproved group. According to the chi-square test, the difference in frequency cannot be the result of mere chance (see Table 2).

TABLE 2. DISTRIBUTION OF RECORDS WITH 3 OR MORE W+

Schizophrenics	$\geq 3W+$	$< 3W+$	Total
Much improved	7	3	10
Unimproved	1	7	8
Total	8	10	18
Chi-square 5.951			$P < .02$

We shall now discuss factors which pertain more closely to what is generally defined as personality, i. e., factors representing the degree and type of the individual's responsiveness to the environment. The most outstanding difference between the unimproved and the much improved groups is that manifested in the human movement interpretations (indicated by M in Table 1). On the average, the much improved patients have five times as many of the M interpretations as the unimproved patients. Even with our present small number of cases, the difference in the percentages of patients with M responses approaches statistical significance. The human movement response is of great psychological importance and, following Rorschach's example, it is advisable to make a distinction between the human movement responses which are sharply perceived and justified by the shape of the inkblots, and those which are vaguely perceived and do not fit their respective inkblots. Rorschach claims that a poorly perceived M is an exceptional occurrence in the records of normals. It is worth while to apply the distinction between the M+ and the M— to all cases.

Examining the records of our patients, we discover that the M interpretations of the unimproved patients are vaguely perceived while all of the much improved patients who produce M's at all have at least one sharply perceived M. The chi-square test suggests that there is a functional connection between improvement after insulin treatment and the ability to produce good human movement interpretations before treatment.

TABLE 3. DISTRIBUTION OF GOOD M INTERPRETATIONS

Schizophrenics	M+	No M+	Total
Much improved	7	3	10
Unimproved	0	8	8
Total	7	11	18
Chi-square 9.163			P<.01

A Rorschach factor which has been found to be of great value is the percentage of sharply perceived forms. In computing the percentage of good forms we have followed Rorschach both in the standards of sharpness of form and in the type of answers scored as F (indicated by F in Table 1). Since the type of answers which Rorschach designated as F includes our FM, m, K, c and F categories, our percentages of sharply perceived forms or F+per cent are calculated for the sum of these answers. It is interesting to note that the average F+per cent increases with the degree of improvement, being 59 in the unimproved, 66 in the improved and 72 in the much improved group. Experience has shown that an F+per cent of 70 is a diagnostically important critical point in personality studies.<sup>2</sup> The present investigation corroborates the value of the 70 F+per cent. As can be readily seen from Table 1, 70 per cent of the much improved cases have an F+per cent of 70 or higher, while only 29 per cent of the unimproved patients succeeded in obtaining an F+per cent of 70 or higher. One of the unimproved patients was excluded from this calculation because he gave only one F response. The chi-square test implies that there may be some positive relationship between the schizophrenic's capacity to produce an F+per

cent of 70 or higher and his ability to improve after insulin treatment.

TABLE 4. DISTRIBUTION OF CASES WITH AN F+PER CENT OF 70 OR HIGHER

Schizophrenics	$\geq$ 70 F+per cent	<70 F+per cent	Total
Much improved	7	3	10
Unimproved	2	5	7
Total	9	8	17
Chi-square 2.836			P<.10

Another difference, although not so striking statistically, is found in the incidence of the color interpretations. The average number of color responses (indicated by FC, CF and C in Table 1), is larger in the much improved group than in the unimproved one. The ratio of the human movement responses to color responses reveals the range and variety of the mental experiences of which the subject is capable. In computing the ratio of M:C, we weighted the different color responses according to the Rorschach formula, assigning the value of  $\frac{1}{2}$  point to the FC, of 1 point to the CF and of  $1\frac{1}{2}$  points to the C type of color response. The group averages for both the M and color responses are lower in the unimproved group than in the much improved group, and in both groups the number of color responses predominates over the number of M responses. The ratios of M:C are 2.0:3.4 for the much improved group and 0.4:2.1 for the unimproved group. Again we find the patients who improved greatly after treatment superior to those who remained unimproved; the former possess richer personalities and consequently they are more able to profit from personal experiences and environmental influences.

#### DISCUSSION OF RESULTS

The following conclusion seems inescapable because it can be applied so consistently to those group differences which exist between the pretreatment Rorschach records of schizophrenics who have benefited from insulin treatment and those who derived no



benefit from insulin treatment: Already before the treatment was begun, the much improved patients had personalities functioning on a higher intellectual and emotional level than did the unimproved patients. Our results offer good evidence in support of this general conclusion. When the subject is shown a series of meaningless inkblots, he can interpret them only by relying on his personal experiences and imagination.

A higher and a more efficient intelligence is required to produce a whole interpretation than to give a normal detail interpretation of similar complexity and quality. The whole interpretation represents the capacity for intellectual generalization and for the comprehension of the complex relationships existing between parts and the whole to which these parts belong. All other conditions being equal, the average number of good whole interpretations increases with age and intelligence. On the other hand, the tendency to give rare detail interpretations is associated with a type of intellect which tends to preoccupy itself with unimportant differences in various viewpoints or attitudes and to lose itself in small details to the detriment of the main issue. Our much improved patients have more of the whole and less of the rare detail responses, which causes us to infer that the average intelligence of the much improved group not only produces more ideas but also functions on a higher and more efficient level than the average intelligence of those patients who have not improved after insulin treatment. There are more patients with a high percentage of clearly perceived forms among the much improved cases than among the unimproved ones. The F+ per cent is a measure of prolonged voluntary attention, of the logical precision of ideas, or of a conscious and rational control over one's thought processes. In these intellectual traits the much improved patients as a group show themselves to be superior to the unimproved group.

The human movement responses indicate the capacity for inner life and for the development of a conception of behavior according to which the individual attempts to regulate his conscious adjustment to reality. Thus the M responses serve as a stabilizer of emotional reactions and as a guiding principle influencing the subject's attitudes toward the environment and his own future.

The much improved patients are definitely superior to the unimproved patients in the number and especially in the quality of their human movement interpretations. The much improved group also demonstrates a greater capacity for emotionally impulsive and direct responses to stimulation from the environment. This is implied in the distribution and larger number of color interpretations. Judging from the Rorschach findings, the much improved group was, before treatment, emotionally much more irritable, labile and impulsive than the unimproved group. However, this relatively greater lability in the much improved group is indicative of a closer emotional contact with the environment rather than of a weaker control over the emotional reactions. For, while the much improved patients showed a higher degree of emotional responsiveness to the environment, they also disclosed a higher capacity for controlling and stabilizing their emotional reactions because of their relatively better developed inner life and more efficiently functioning intelligence. This is plainly indicated by the average ratios of M:C for the two groups.

A comparison of the amount of intellectual stereotypy also places the much improved group in an advantageous light. Stereotypy in the Rorschach technique does not necessarily denote a persistent repetition of senseless acts or words; it refers rather to a tendency to offer stock interpretations to which the pictures lend themselves, such as the heads of dogs, humans, etc., and to a failure to enrich the inkblot perceptions with imaginative embellishments.<sup>3</sup> The usual Rorschach measure of stereotypy is the percentage of responses with an animal content. Our groups, however, do not differ significantly in the percentage of animal responses because many of the unimproved patients persevered with another content. For example, one of the unimproved patients gave 10 color naming answers in a total of 13 responses; others persevered with anatomy or parts of the human body. A comparison of the records of the two groups of patients reveals a much greater variety of ideas and a much greater elaboration of these ideas in records of the much improved group.

The personalities of the much improved patients are less disintegrated than are those of the unimproved patients. This by no

means implies that the pretreatment deviation of the much improved schizophrenics from the personality structure of normal adults is insignificant. On the contrary, the Rorschach records of these patients show definite signs of abnormality, our results being compatible with those obtained with the Rorschach method by other investigators of adult schizophrenics.<sup>4</sup> Proof of our schizophrenic patients' deviation from the norm can be readily seen in their relatively small average number of inkblot interpretations and in their high average time per interpretation: moreover, those patients whose total number of responses exceeds the average for normal adults have an abnormally large number of rare detail responses. Thus all of the cases show unmistakable signs of the very inefficient functioning of the schizophrenic intellect. Many Rorschach records in the unimproved group resemble records obtained in organic brain diseases.<sup>5</sup> The improved, much improved and recovered cases possess more of the typically schizophrenic characteristics, especially the great unevenness of performance level and the conspicuously absurd interpretations.

Our results are compatible with findings dealing with the relation between the duration of psychosis and the outcome of insulin treatment. The rate of improvement and recovery is much higher among those patients in whom the schizophrenic disease process has begun less than two years before their insulin treatment than among those in whom the schizophrenic psychosis has been of longer duration. In the vast majority of cases the schizophrenic process gradually leads to a mental deterioration. Hence, the recent cases, on the whole, deviate less from the norm of healthy adults. Experience leads us to believe that the prospect for improvement or recovery among the schizophrenic patients with rather atypical symptoms of elation and depression is brighter than among those incapable of deeper emotional reactions. Our Rorschach findings point to the same conclusion.

The results of this communication are based on group comparisons. Our main concern, however, is with individual cases. The present results justify and offer a basis for a more detailed analysis of the Rorschach records of schizophrenics, about to receive in-

sulin treatment, in the hope of establishing more reliable and more precise principles of prognosis to be applied in individual cases. As a matter of fact, the more thoroughly one probes into the details of the Rorschach records, the more pronounced become the differences between the much improved and the unimproved patients. It should be kept in mind that "a Rorschach interpretation is not an 'automatic' translation of test factors into descriptive verbiage, but rather a process of reasoning from a set of experimental factors to a series of conclusions."<sup>6</sup>

Thus, those Rorschach factors which can be easily tabulated contain necessary but by no means sufficient material for an adequate and valid personality description of the individual subject. Complete and valid interpretations of individual Rorschach records<sup>7</sup> illustrate irrefutably the necessity of going beyond a superficial comparison of the subject's record with a set of statistical data. When Rorschach's rules of interpretation are followed, his method of personality description seems to possess certain advantages over the usual clinical observation, thus becoming a valuable addition in clinical work:

1. The Rorschach technique permits us to arrive at valid conclusions regarding the patient's personality structure in a much shorter time than is possible through clinical observation. This has been demonstrated by an investigation of Benjamin and Ebaugh,<sup>8</sup> who compared Rorschach diagnoses with diagnoses based on anamnesis and clinical observation. The agreement between the final clinical diagnoses and the Rorschach diagnoses was remarkably close.

2. Patients with symptoms of agitation or depression sometimes afford a serious problem of differential diagnosis. According to Guirdham,<sup>3</sup> in some cases of this description the Rorschach method is the only available means of differential diagnosis.

3. By means of the Rorschach it is possible to differentiate between two types of intellectual confusion which indicate opposite prognoses and which are frequently found in schizophrenic records. The type of confusion pointing to better prognosis is characterized by a rather accurate visual perception of the inkblot and by a rather fantastic elaboration of these perceptions. The other

type of confusion, which appears to justify a bad prognosis, is marked not only by a rather absurd elaboration of the perceptual material but also by very vague perceptions.

4. The Rorschach method is essentially independent of environmental influences. Therefore, it allows us to recognize the subject's spontaneous tendencies, which form the basis of his personality, more reliably than any other experimental method of personality description known at present.

Since insulin is not a specific in the treatment of schizophrenia, we do not expect the personality changes following this treatment to be qualitatively different from the spontaneous changes occurring in schizophrenia. The personality changes produced by insulin treatment are more rapid and perhaps more intense but apparently they do not differ in nature<sup>8</sup> from the spontaneous changes. It can be assumed, therefore, that prognostic principles based on observations made on insulin-treated patients will also be applicable to schizophrenics in general.

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## NEUROLOGICAL OBSERVATIONS IN HYPOGLYCEMIC STATES

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The insulin treatment of schizophrenia offers manifold possibilities for investigation of the nervous system in the hypoglycemic state. Naturally, the mental phenomena occurring during this treatment have been studied more extensively, and mainly from the point of view of the efficacy of the treatment; while attention has been given only incidentally to the varied neurological manifestations. Few authors have devoted themselves to a thorough investigation of the changes observed in the physiological functions of the nervous system in this state.

This therapy has provided the first opportunity to study extensively the pathologic physiological mechanisms of coma quasi-experimentally produced in many individuals. Hitherto, observations have been made sporadically on comatose individuals but not much has been gained from the study of these isolated cases. It is striking to note how few neurological reports have been published on individuals in coma of hypoglycemic or other origin. It is mentioned occasionally that there are pupillary changes present in coma, that the Babinski occurs; that the patient has epileptiform seizures or that in deep coma all reflexes are gone and no tonus is present. But all these descriptions emphasize more the narrowing or absence of consciousness and the phenomena linked with these rather striking manifestations, than the detailed description of the neurological changes present in this state. Furthermore, these studies of coma were mostly made in uremic or diabetic cases and only rarely in individuals with spontaneous attacks of hypoglycemia. Therefore, these conditions are not identical with those observed in schizophrenic individuals receiving large doses of insulin. We have, of course, little knowledge of the neurological manifestations which nonpsychotic individuals show in insulin shock. Doubtless, in spite of many analogies, some differences occur. For instance, certain catatonic manifestations in schizophrenia are reinforced or modified in different stages of hypoglycemia, phenomena surely not seen in nonpsychotic individuals.

Golden<sup>1</sup> divides the neurological manifestations in hypoglycemia into two groups, the first occurring during the early hours of shock, just before or during the first part of the comatose state, and the second appearing toward the end of the hypoglycemic shock. The first group of phenomena appears slowly, and endures for a longer period, while the second occurs abruptly. The first group comprises: 1. Choreiform movements of the extremities and body, and restless tossing of the head; 2. Prolonged sucking movements; 3. Pupillary dilatation, flushing of the face associated with rigid extension of the extremities, and torsion movements, often in connection with labored breathing; 4. True defence reflexes; 5. Positive Babinski in the somnolent stage, disappearing in deep coma. 6. Absent corneal reflexes, clonus of the jaw, slow "trombone-like" tremors of the tongue, clonic movements of the eyelids and jaw, the so-called "frozen" athetoid movements in which the extremities remain fixed in the position of athetosis, and at times transitory hemiplegia and aphasia. The sudden manifestations occurring at the end of the hypoglycemic state include convulsive tremors or seizures, small tonic pupils, flushed face, torsions, rigid attitudes, and respiratory changes generally appearing shortly after the termination of the hypoglycemic state.

De Morsier and Bersot<sup>2</sup> describe similar neurological findings during hypoglycemia, but add that besides the motor phenomena there are manifold sensorial symptoms present, for instance: disturbance in general sensation, such as heat and cold; visual, auditory and olfactory illusions and hallucinations; as well as disorders of the vestibular apparatus, to wit, vertigo, sensations of gyration or levitation. In all cases disturbances of the vegetative nervous system are found, such as excessive perspiration, salivation, vasomotor imbalance, et cetera.

Von Angyal<sup>3, 4, 5</sup> has published several papers on the neurological manifestations in hypoglycemia, expressing the view that there is a regular progression of events as hypoglycemia attacks various parts of the brain in relation to their phylogenetic and ontogenetic organization. Thus, hypoglycemia affects successively the frontal pole, the premotor area, the precentral gyrus, later the

basal ganglia, the extrapyramidal pathways, and finally the medulla.

The clinical symptoms witnessed are: 1. Talkativeness and psychomotor restlessness, which appear two to three hours after insulin injection. This manifestation indicates an interference with the function of the frontal lobe. The next phase begins about two and one-half to three and one-half hours after injection, and is characterized by somnolence, assumption of sleeping postures and moderate hypertonus. These clinical symptoms appear when a functional ablation of the frontal poles takes place. When the precentral gyrus and later on the basal ganglia are affected, increased muscle tone, clonus, pathological reflexes, abnormal postures, sucking movements and forced grasping may be observed.

These changes are usually seen on the right side in a right-handed person, and later on occur bilaterally. As the extrapyramidal apparatus is progressively interfered with, profound sleep, choreiform movements and crossed tonus changes occur followed by general torsion spasms and periods of tremor. With deepening of the coma, the spontaneous movements disappear. Deep coma shows an interference with the rubrospinal and tectospinal tracts, resulting in an increased muscle tone, diminution of reflexes, and the loss of pathological reflexes such as Babinski which were present in the preceding phase. Finally in a deep coma, a complete areflexia takes place followed by cardiac and respiratory disturbances of bulbar origin. After termination of shock one sees a rapid reversal of these phases in regular order.

Von Angyal assumes that the neurological manifestations in hypoglycemia just described are characteristic of patients who show the so-called frontopolar type of response. Aside from this frontopolar type there exists a parietal one. This parietal reaction may be subdivided in four groups showing: 1. The presence of paresthesias in the extremities and trunk, disturbance of perception of the body scheme. 2. A paralogic-sensoroamnesic aphasic syndrome characterized by a mental reaction typical of schizophrenia, the patient being unable to coordinate sensorial, intellectual and affective aspects of a concept or situation. Speech in this condition is characterized by perseveration, klang association, incoher-

ence and disconnectedness. 3. Static perceptual changes, as when a patient complains of a feeling of imbalance, of having the sensation of flying through space, of feeling that time has changed, and nystagmus is present. 4. Disturbance in the perception of space occurs and sometimes includes complex visual hallucinations.

In the opinion of Von Angyal and others it is probable that the schizophrenic process first assails the most differentiated and susceptible portions of the brain, and hypoglycemia primarily affects them. It is suggested that the manifestations during shock are due to dysfunction in those portions of the cerebrum which have been rendered vulnerable by the schizophrenic process.

Without doubt, the phenomena just described may be seen in different patients in one or another stage of hypoglycemia, but after examining a series of cases over a period of nearly two years, we are unprepared to confirm some of the observations cited. In the first place the gradual sequence of events described above is rarely observed. Many cases, for instance, go into coma quietly without showing any irritation of the motor areas and without any so-called frontal lobe signs like sucking or forced grasping. In other cases, we see symptoms of such bizarre variety, unexpected and changeable, that it is difficult to bring order into them or to try to explain their localization. It is obvious that the regression does not take place from level to level, but different functional levels of the nervous system are involved simultaneously. This dissociation of function takes place in a diffuse way throughout the brain, which reacts differently in its parts to hypoglycemia. It is not like leveling a many-storied house, story by story, systematically, but rather like subjecting this house to a bombing, certain parts remaining for some time intact, as other parts disappear. For instance, the deep reflexes of the extremities may disappear while the corneal reflexes, ontogenetically much older, persist. Again on coming out of coma, the patient is able to swallow and cough, while the corneal reflex still cannot be elicited. In other cases, the pyramidal tract signs develop before the skin and deep reflexes disappear, even before the patient is in coma.

We rarely see the so-called frontal or parietal reaction type clearly. In many patients the so-called frontal type of response is

accompanied by disturbance of sensibility, a feeling of vertigo or auditory and visual hallucinations, suggesting an involvement of both the parietal and occipital lobes, at the same time. Here we must emphasize that in our cases the motor manifestations were far more frequent than the sensory. We do not know whether the motor reaction is predominately due to increased susceptibility of these parts of the brain to insulin or whether these motor manifestations are more obvious, being objective. Patients of course are unable to give a good account of any subjective sensory changes. About the motor manifestations they have almost as little recollection.

Although in insulin shock we do not see a clear cut reaction type as described by other authors, we are nevertheless impressed by the fact that the patients receiving this therapy show an individual pattern of reaction. Day after day during the treatment, like a phonograph record, they play the same neurological tunes. If one shows jerkings of the head, tongue and extremities and at the same time auditory hallucinations, he repeats this combination over and over again. Another has recurrent epileptiform seizures, and a third repeatedly goes into coma quietly without having any motor or sensory manifestations. It may be that certain areas of the brain have an individually selective response to insulin. Thus, it may be argued that not only do the higher functions of the nervous system show a marked individualization, but also that the lower ones have personal characteristics.

Sometimes in the patient's reaction to insulin a sudden change occurs, similarly to a mutation. Patients who heretofore have quietly subsided into coma, unexpectedly become convulsed, while others who have shown alterations in tonus and spasmodic movements go into coma one day without any such display. Frequently this changed reaction is sustained for some time. In other cases it occurs only spasmodically, the patient returning to the previous pattern. We are unable to tell why such changes occur.

Sometimes the sensorimotor phenomena appear unilaterally, but rarely do they so persist for any considerable length of time. As a rule they become bilateral, though one side may occasionally predominate. We are unable to substantiate the claim that motor



manifestations appear first on the right in righthanded individuals, indicating a functional change in the left hemisphere, which has the preponderant position. It is claimed that the most recently acquired integrating force must be the most vulnerable. In our cases the motor irritation often began on the left side, and in two cases, transient hemiplegia occurred on the same side in righthanded individuals. We doubt, considering the number of exceptions, that the above mentioned rule is as significant as Von Angyal and others imply.

Some of the author's further findings might be presented briefly at this point, postponing the final details for a later communication. The skin reflexes are the first to disappear in coma, particularly the abdominals. The deep reflexes follow, but in varied order for each individual. While the Babinski is usually present in all cases of coma, we have noted that, occasionally, this sign could not be elicited in deep stupor. It is interesting that while the Babinski often occurs in coma, other pyramidal tract signs with similar significance, such as Rossolimo, Mendel-Bechterew, Chaddock and Oppenheim, seldom appear. The pyramidal signs of the upper extremities like the Hoffman-Tromner, basal joint and Leri signs are simultaneously present.

The forced grasping, which has received much attention by Schuster and Pineas,<sup>6</sup> Brain and Curran,<sup>7</sup> and Walshe and Robertson,<sup>8</sup> is sometimes seen in the hypoglycemic state and generally appears when the patient is in superficial coma and no longer responds to questioning, yet still responds to stimulation with a defense reaction. With the exception of three cases, all of our series showed hypertonia and even spasticity. In such cases the term, tonic innervation or tonic perseveration used by Wilson and Walshe,<sup>9</sup> is probably better than forced grasping, since it is rather an inability to relax a muscle group than a real grasping. We could, however, elicit real grasp reflexes in three patients. They did not show changes in tonus. Adie and Critchley<sup>10</sup> have drawn attention to the similarities between the pathological grasp reflex of the hand, and normal infantile reflex grasping. It is indeed striking that some of the grasp reflexes in hypoglycemia simulate perfectly the groping reflex of the baby. Wechsler, Bieber and

Balser<sup>11</sup> have demonstrated the value of the optimum reflex position in eliciting the grasp reflex. They suggest that the patient be placed in the lateral position in order to bring out or intensify the reflex in the contralateral hand. This was confirmed in the hypoglycemic state. We could not modify the reflex by labyrinthine stimulation although it is possible to do so in grasp reflexes of other etiology. This question is receiving further attention from us in connection with experiments on the vestibular apparatus.

Tonus changes were frequent and markedly variable. Some patients approaching coma became hypotonic, in other patients hypertonia appeared, especially in the muscles of the extremities, often accompanied by spasms. Incomplete pictures of decerebrate rigidity were occasionally observed. The head and neck are often retracted, some opisthotonus is present, the extremities are rigidly extended and adducted, the hands overpronated, the wrists flexed and the feet in equinovarus position. Fragmentary decerebrate rigidity, that is, overpronation of the hand or an equinovarus attitude of the foot, is commonly noted. These postures in no way differ from those seen in certain midbrain lesions in which inhibitory pathways governing the vestibular and reticulospinal tracts are interrupted.

Tonic neck reflexes (Magnus)<sup>12</sup> have been elicited in certain patients, but were not clear cut in form. By changing the position of the head, postural reflexes seldom shifted to the opposite side, but as a rule remained fixed. The Brudzinski sign (tonic neck reflex), often positive in meningitis, could not be elicited in our patients.

We frequently observed both positive and negative supporting reactions. They are in no way different from those described by Schwab;<sup>13</sup> these occur in diseases of the frontal and temporal lobes, the cerebellum, and pons. It is difficult to localize the exact site of interruption in these cases. In regard to the righting reflexes, many patients emerging from coma display an infantile form of rising similar to those observed by Schaltenbrand<sup>14</sup> in children, or in adults having a temporal or parietal lobe tumor. Space does not permit the inclusion here of the other motor manifestations observed, such as athetochorieform movements, torsion spasms, and

so forth. The author however, would like to call attention to the so-called forced jerking movements, since they show a peculiar characteristic. These movements are often released or modified by an external sensory stimulus, as seen in tetanus or in strychnine poisoning.

In some patients forced laughing and crying were observed. This was encountered chiefly in patients coming out of coma, and persisted even for a short period after the patients were entirely out of the hypoglycemic state. When questioned afterwards as to why they cried or laughed they stated that they were "forced to do so." They were unable to stop this crying or laughing on request. The facial mimic was adequate, and the patients gave the impression of natural crying or laughing with the exception that the affect appeared to be very much exaggerated. During this time the speech of the patient was dysarthric and dyspraxia was present to a certain extent. This syndrome is similar to that seen in pseudobulbar palsy, and may be due to an interruption of the frontopontine bulbar pathways, removing inhibitory forces, setting automatic thalamic mechanisms free.

Some of our patients who showed catatonic manifestations before the institution of the treatment displayed a marked intensification of the catatonic symptoms in coma. One showed Schnauzkrampf even after she went into deep coma. Another patient had a peculiar form of tic, moving her shoulder suddenly upward, and her head forward. She showed these mannerisms before the treatment started, but more markedly during and following coma.

In regard to the pathogenesis and localization of these different symptoms, we are still far from a complete understanding. Some authors attribute them to a functional decortication, others to an irritation of the extrapyramidal apparatus but the writer prefers not to indulge in theories. Observations are being continued. It is already obvious that the insulin treatment in schizophrenia not only has psychiatric significance, but is also a new and fascinating method of studying cerebral physiopathology.

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## SUBJECTIVE EXPERIENCES IN PATIENTS INCIDENT TO INSULIN AND METRAZOL THERAPY

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In this investigation 55 patients receiving insulin or metrazol treatment or both were interviewed. This was undertaken for the purpose of obtaining subjective material which, it was hoped, would add further information regarding the nature of the experiences, the physical and mental effects, and the process of improvement or recovery associated with these two forms of therapy.

The patients interviewed included both men and women. As no clear discrimination could be defined in the respective material obtained from the two sexes, this factor will be ignored in the results given.

The patients were interviewed at different periods during the course of the treatment.

The following statistical divisions can be made: Of the total number of cases, 8 were treated with insulin alone, 37 with metrazol alone, and 10 with insulin followed later with metrazol. As to diagnosis, they included: paranoid 19, catatonic 16, hebephrenic 17, simple 2, and manic-depressive, depressed, 1. As to duration of illness: 1 patient had been sick for only ten months, 10 for from one year to one and one-half years, 14 from two to three years, 13 from three and one-half to five years, 14 from five and one-half to 10 years, and 3 from ten and one-half to fifteen years.

From the standpoint of a sensory experience, these patients contributed nothing that has not already been noted by others. With metrazol, the odor of ether, a buzzing or pressure in the ears, a tightening or stiffening of the muscles, a whirling sensation in the head, a sensation of feeling very light or of fading away, headaches, nausea, were described by different patients. The majority, however, even a few hours after treatment, could recall very little of their sensory experiences. None could describe anything which might be interpreted as a hallucination. Few dream experiences were elicited. One patient said, "I dreamed I was on a roller coaster and the place where the roller coaster was, was in Hell."



In comparing the sentiments expressed by the patients about the two forms of treatment it was readily apparent that insulin treatment was decidedly less unpleasant to undergo than metrazol.

In spite of the objective evidence of distress, the insulin-treated patients could recall very little of their discomfort except the profuse sweating. None could recall any feeling of anxiety. One spoke of the bodily pains and weakness immediately on the conclusions of the treatments and recalled his temporary confusion and dizziness. One compared the transitory after-effects to alcoholic intoxication. This patient also described a feeling of inner tension during the course of hypoglycemia which seemed unbearable to him. He explained how he threw himself out of bed to relieve this feeling of tension. Another, in describing his reaction to insulin, commented, "A person doesn't like to struggle. When I got the insulin treatment I was really struggling, so I figured if I improve myself I won't have to take any more treatments." One patient stated simply, "The insulin just stuns you and puts you to sleep."

With metrazol the patients varied between extremes in their feeling for or against the treatments. Nearly all regarded them as unpleasant to a greater or less degree. There were a few exceptions to this.

One patient remarked, "I didn't mind them. I wasn't afraid of them. As a matter of fact I waited for them." Another said, "I don't feel it as a shock. Taking the whole thing, I'd say the unpleasant part of it is a minor part of it." A patient troubled with obsessive thoughts stated, "I like the way it puts me to sleep, makes me forget myself. I want to forget my bad habits." Finally, one patient seemed to derive some enjoyment from the metrazol treatments. He remarked, "It shocks your whole body. It's a wonderful thing. When I saw how it shocked me I really enjoyed it."

The majority receiving metrazol seemed to take a fairly tolerant attitude toward the treatments, even though they found them unpleasant. One patient commented, "They ain't painful. They ain't very smooth. Naturally there are difficult parts but it can't be helped." Another said, "I think they're very good. I don't

like to lose consciousness but there's no objection. It's not painful." One remarked, "I don't like them at all, but I didn't say anything because I thought they were doing me some good."

At the other extreme there were such comments as these—"It's hard to take. Sure it's unpleasant. I hate it." "I dislike them very much." "Oh, they're terrible. Don't give them to me. They're very unpleasant." "They're very painful. You get like blown up and you go unconscious, like something boils up."

About one-fourth of the patients admitted a fear of death in connection with the metrazol injections. Some were more positive about this fear than others. A female patient made the statement, "Sometimes I thought they'd rock you to sleep for good. You think everything dies in you. Everything fades away. I felt every time I took that as if I was going to die." A male patient stated, "It was a ghastly feeling, you know. You felt as if you were hovering between life and death. I fought this fear and lay quietly but I didn't like them."

In many instances the fear of death in these cases could be correlated with an already existing morbid anxiety, guilt feelings, fear of bodily harm, hypochondriasis or depressive preoccupation with death. Thus, the metrazol acted merely as an agent to bring this concern about death to a sharper focus.

One patient had long been hypochondriacal. While having his blood pressure taken before the metrazol treatments were begun, he developed an acute anxiety, became pale, and said he was dying. As might be expected, he showed a marked fear reaction with metrazol. In a panic following one injection, he cried, "It's the end of the world and another day is coming. It's my father talking. I love my father. I love my mother. Let us live. I want to live. Life is wonderful. I'm afraid. I think all the religious people are good. I have been sick but I'm getting over it. I was foolish enough to be stubborn about it." Later, when quiet, he said, "I'm afraid of it. I have a fear of being killed."

A female patient told of her preoccupation with thoughts of death for a number of years, and remarked, "I lost my father. I think his death caused my illness. He died of cancer and whether anything like it is inside of me I don't know." Referring to the

treatments, she said, "I thought I was going to die after he gave me that treatment. It stayed in my head I was going to pass away, and I was so frightened."

It is interesting that all but six of the metrazol patients recognized that they were being treated for their sickness. These few patients gave other interpretations. One believed that the treatments were to cure him of his habitual masturbation. The others regarded the metrazol injections as punishment. They were quite indignant about it. One said, "It don't seem to me they're doing it to make you feel good. It's like if they punish you in the early morning. They rush at you and put the needle in your arm and then you wonder why you deserve all that punishment." Another remarked, "I don't want them anymore and I don't want to be sent to any electric chair either. They almost killed me. Trying to drive a man insane, that's all. To tell the truth Doc, I have been a bad boy and I guess that's why you punish me, abusing my body and going to see women and making love to them."

The evaluation of the effects of insulin and metrazol treatments by the patients bore little if any relation to the conscious anxiety or discomfort the patients experienced.

All of the insulin-treated patients felt that the treatments had benefited them mentally or physically, or both. The obsessional patient already referred to, who was very pessimistic about any treatment, remarked about the insulin treatment, "I gained weight and felt stronger. I'm sure it didn't stimulate me, didn't make me any livelier." Another, who recovered subsequent to metrazol, said of the insulin which he had had previously, "I think it helped me physically. I don't think it had any effect on my mind." A similar patient said, "It's very good. That's what helped me gain twenty-five pounds. I did feel good physically, mentally too." Another patient stated, "It stimulated the mind. I felt pretty good after the insulin treatments." A female patient, treated only with insulin, described how, during hypoglycemia, she relived vividly her past life, evaluated her present situation and realized she had to do something about it. A male patient who recovered with insulin spoke as follows, "It gave me great strength in my body and

mind. I gained weight and gradually I felt I'm coming out of a fog. I started to speak and notice things about me. I thought I'd like to see my people. Before the treatment, I was in a little world by myself having bad feelings. After I got the treatment, I felt rather the reality."

The best description of insulin treatment was given by a paranoid who was definitely on a down-hill course before receiving insulin. He said, "I feel wholly normal. I admit I was mentally ill. I imagined things that didn't exist in reality. As soon as I began to take the insulin my mind began to look at things realistically again. It made me feel very reasonable, very rational, and think clearly. It gave me much more energy and vigor. It increased my appetite, even cured my constipation. It changed my attitude toward the hospital. The insulin cured me and naturally I feel well disposed toward the hospital."

Of the metrazol patients, one-fourth did not express any feeling of benefit from the treatments, but only two of these considered that they had been affected adversely. A hebephrenic patient, sick five and one-half years, claimed that the metrazol injections had destroyed a part of his mind. Another hebephrenic of eight years duration, felt they had done him harm but wouldn't specify. Nearly all in this group were cases of long duration.

The remaining three-fourths were positive in their opinions as to the beneficial results of metrazol. Because of the greater amount of material in this positive group, the subjective appreciation of beneficial results may be considered under three headings—physical, emotional and ideational.

Many patients felt that metrazol treatment had benefited them physically. They expressed this in terms denoting greater physical energy, such as, "Stronger," "Spryer," "More alive," "More active," "Peps me up," "I seem to have more go to me," "My actions are quicker than they have been," "It has toned up the blood, the blood system functions faster, toned up the body," "Makes you feel good like you can do things." Several patients remarked on their improved appetite. Needless to say, these subjective appraisals were borne out by objective signs.

In the emotional sphere, there was evidence in a number of cases treated with metrazol, of a decrease of inner tensions, anxieties, emotional conflicts and a raising of the threshold of excitability.

One patient commented, "I don't worry so much. I used to worry about every little thing, everything that popped up that was a little out of the ordinary. I'm less fidgety. I don't jump around so much." A female patient, much improved after three and one-half years of regressive behavior, remarked, "Once in a while I do feel tense inside, but I'm letting my mother do the worrying." The one case of depression treated with metrazol, a female, much improved, asserted in regard to her emotional state, "I think it made me feel much brighter, look at life much brighter. I don't feel discouraged. I don't worry now. I feel calm because I make the best of everything now." She recommended the treatment for her sister, also a patient. The obsessive patient, already referred to twice, was troubled with the painful visual memories of perverse sexual acts of 10 years previously. Referring to these visual impressions after metrazol therapy he said, "I don't seem to see the things as clearly as I did. I feel less nervous."

In the ideational sphere may first be noted the shift of attention from the self to the outside. The patient just referred to, also said, "My mind was introverted before. It's not so introverted now. I was always thinking about myself. I wasn't thinking about things outside at all. Now I'm thinking about things outside a little." Others made similar comments. A female patient remarked, "I think in different channels, in going downtown, new clothes, taking care of the house. The next thing I need to do is learn to cook. I'm interested in all kinds of things." A hebephrenic male of seven years standing stated, "It makes me more active as far as my senses are concerned, makes me more observant."

From the standpoint of greater clarity of thought, there were many positive statements. A paranoid of four years duration stated, "My head was dizzy. I was confused. My mentality was going and this sort of brightened it up a bit. I feel much saner now. I know what I'm talking about anyway. Before I was confused in what I was saying." One metrazol patient, who had been



remarkable for his irritability and impatience, said, "I'm slower now, more methodical. I'm not in so much of a push. I take things in a more logical manner." A female catatonic, of three years duration, previously inaccessible, stated, "I think that they have opened my mind a little further. I got a little wiser by walking around. I seem to be smarter. Get wise to problems, problems of livelihood, home problems. You take the problem up and think about it. You go home and go to work." This patient had previously had insulin with no noticeable improvement. A catatonic male, returning to face reality, remarked, "Somehow it brings me to my senses, makes me realize I haven't been the kind of chap I should have been. That's how I came to this situation, this sickness." A paranoid of two and one-half years duration, stated, "Impressions become more clear and distinct. One seems to observe things and judge. Before, impressions were not voluntary. Now, all the difference in the world. The impressions are fresher, not the same old things, and they are voluntary. Better control of thought."

In considering the question of the activity of delusional trends, hallucinations and phantasy in these patients, a few general impressions may be noted. Abnormal preoccupations had dropped out of consciousness, were in abeyance, or were definitely less active. More realistic concerns tended to displace them. In many cases, the affective components, ordinarily manifested by anger, evasion, denial, active defense, were noted as greatly diminished. Some patients required a special effort of memory to recall their former abnormal preoccupations. Others talked about them casually. In those with delusions and hallucinations still active, there was less emotional display in discussing them.

The willingness to recognize mental illness in themselves, and the increased accessibility to discussion, suggestion and advice, are features characterizing metrazol- and insulin-treated patients, in contrast to the reluctance usually observed in schizophrenics showing a spontaneous remission. They have a clearer perspective of themselves as patients in a hospital and look upon the hospital as having endeavored to help them. This may be due in part to the greater attention they receive and to the indisputable fact that

something active, even drastic, in the way of treatment, is being given them. However, most credit must be given to the drugs themselves because something happens psychobiologically to these patients that reanimates their prepsychotic realistically-conditioned consciousness.

One patient deserves a special note for his introspective analysis. He is a paranoid of six years duration. Of fear in connection with the metrazol treatments, he said, "There is fear only in so far as the repetition of the treatment creates the imaginative anticipation of the thing over again." As to the effects of the treatment, he spoke as follows, "I believe there is a general toning up of life all around. I have a wonderful appetite. I'm more alive, more active. I am more alert to what is going on about me and I'm more acutely conscious of all sounds around me. The reason I haven't objected to the needle is that it has practically stopped my mental processes. Under the influence I find I'm not a thinking animal." Asked why he thought this a good effect, he replied, "That's an individual opinion. Just because a person does a lot of individual thinking doesn't mean it's a marvelous achievement. I anticipated that these treatments would rile the processes up and start a train of thought. Instead, I found myself held back from going in that direction. Instead of stimulating my thought processes it stimulated my appetite, my physical condition, ease of doing things, emotional ease, no concentration of effort. It has held my imagination in curb, which is what I didn't expect. I thought it was going to let the imagination run riot. There is nothing I'm hunting for. Now it's in the environment around me. Now I'm conscious whether I want to be conscious or not."

The interviews with these patients offered an opportunity to test Sakel's view that metrazol acts in a way to "encapsulate and repress the psychosis," and to produce a "retrograde amnesia." The observations made have not indicated this. In the quoted material from the metrazol patients that has been offered here, it may be seen that they spontaneously compare their improved state of mind with their previous condition. A number of patients who were treated only with metrazol, and who were no longer delusional nor hallucinated, were able to give a fair account of their

previous psychotic experiences. However, in both insulin and metrazol cases, there seemed to be nearly an equal unwillingness to think or talk about their psychosis, and a similar difficulty in recalling their dream-like psychotic material. It would appear that both drugs tend to reactivate the realistic consciousness and suppress or possibly discharge the autistic content.

This investigation revives the question of the therapeutic value of a fear of death in dementia præcox cases. It is probably safe to assume that in both metrazol and insulin therapy, whether remembered or not, a threat of death is somehow experienced. However, that this is of much therapeutic value is questionable.

Schizophrenics have in the past been systematically subjected to a threat of extermination in an attempt to cure them, but with doubtful results. Carbon dioxide has had its day. Sodium amytal, which must carry with it, as with any sedative or narcotic, at least a suggestion of eternal sleep, has been largely ineffective. Nitrous oxide and other anesthetics should be therapeutic if the threat of death could be counted on to restore these patients to a full life. Even the self-imposed starvation of many of these patients should reach a point where the imminence of death would impel them to eat and drink again. We know, however, that actually they would die if we didn't interfere.

Hypoglycemia, anoxemia, or even a severe convulsive seizure with metrazol, may have a certain value from the standpoint of a death threat, but these two drugs exert their greatest influence on the brain and body in some other way.

This study has strongly impressed upon the writer the feeling that insulin and metrazol, instead of provoking a fear of death, extend to these patients an offer of life. The best argument for this point of view is the subjective and objective evidence of restored energy and vitality. Both drugs so influence the body as to build up physical reserve. Increased vitality brings a feeling of well being and facilitates psychomotor activity, which, in turn, must aid in restoring the realistic attitude of mind. However, it is possible to build up physical reserve in schizophrenics in other ways, but mental improvement does not follow quite so regularly. Therefore, other modes of action of the drugs must be looked for.

This leads to Sakel's explanation, that these drugs affect the central nervous system more directly, and in such a way as to eliminate the cross circuits and reestablish the prepsychotic pathways. That there is this specific effect has already been suggested in the description given by the patients themselves of what they perceive to be taking place.

One further case gives striking support to this view. It is that of a catatonic male patient. He was in a typical stupor at the time insulin treatment was begun. He was mute, immobile, and rigid. Regularly, at the termination of the hypoglycemia, he had a brief lucid period, but just as regularly lapsed into his stupor soon afterwards. At no time did he have a convulsive seizure. After a full course of treatment he had gained 25 pounds in weight, but otherwise showed no objective improvement. His condition showed no change for six weeks. Then, with a single injection of metrazol, he became completely lucid and remained so. He was interviewed after about five more injections. Speaking of the previous insulin therapy, he said, "It's very good. That's what helped me gain 25 pounds. I felt good physically, mentally, too." Then he asked, "What's the purpose of the metrazol? Is it supposed to tighten the nerves? After it's over I seem to feel stronger, seems to tighten the nerves. It does the same thing to a patient that a piano tuner does to a piano." When asked why he did not talk and move around after the insulin treatment, he stated, "I wasn't sure of myself. I couldn't seem to get the physical and mental to cooperate, until the metrazol came along and that put them together again."

In this case the insulin had apparently prepared the way for recovery, but there remained a psychomotor block that required a generalized convulsion to overcome. Metrazol brought about the final psychomotor reintegration. It is not unlikely that a convulsive seizure during hypoglycemia would have accomplished the same thing.

#### SUMMARY

Patients receiving insulin have little if any objection to the treatment and have no memory of a fear reaction.

All but a small percentage of patients receiving metrazol find the treatments unpleasant and object to them in varying degrees.

One-fourth of the metrazol-treated patients admitted a fear of death in connection with the injections.

All but six of the 47 patients receiving metrazol recognized that they were being treated for their sickness. These six interpreted the treatments as punishments.

In many of those experiencing a fear of death and in all who regarded the treatments as punishments, it was possible to correlate these reactions with previously existing morbid trends.

Both drugs, whether used solely or successively, give rise to a feeling of increased physical vitality, reduce emotional tensions, promote lucidity and a realistic outlook on life, and assist in reintegrating intrapsychic and psychomotor processes.

Both drugs pave the way for more effective psychotherapy.

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## INFLUENCE OF INSULIN TREATMENT UPON SCHIZOID PERSONALITY TRAITS

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During the past year of insulin hypoglycemic treatment at the Rochester State Hospital some interesting features common to three cases have been noted. The outstanding similarity was that of an abeyance or change in fairly clear-cut prepsychotic schizoid personality traits, coincidental with an alleviation of the psychosis, following the use of insulin.

The first case was that of a male, aged 32, admitted April 6, 1937, on transfer from a private mental hospital. The patient's wife, intelligent and cooperative, gave the history. Little was known of patient's early life. He graduated from grade school at the age of 12. Following this he held many jobs and eventually entered the field of specialty salesmanship. In his work he was always considered to be efficient and successful. However, he was unable to hold any position more than a few months since he soon expressed dissatisfaction with the manner in which he was treated. Unfair discrimination was his constant complaint against his employers and his suspicion of them was always very evident.

The patient was first married at 18 and was divorced four years later for nonsupport. He married his present wife in 1930, and they have one son, aged 5. His wife has had to face several marital difficulties. Because of his inability to retain a job, he was improvident. He was sexually promiscuous and strongly alcoholic during the greater portion of the present marriage. Though usually pleasant and sociable with friends, he was constantly jealous and suspicious of his wife ever since she knew him.

In February, 1937, he was in New York City, attempting to obtain a position. This necessitated a great deal of activity in obtaining interviews, answering advertisements, and so on. At the same time he was drinking more heavily than usual. Apparently precipitated by these factors, an active psychosis appeared, characterized by feelings of fear, apprehension and suspicion. He displayed a high degree of misinterpretation, ideas of reference and

fairly prominent ideas of persecution. Shortly after admission to a private mental hospital, he was transferred to the Rochester State Hospital. At first he presented an aloof, bland attitude and admitted a trend, but only for the past. However, his active symptoms soon appeared, and he exhibited fear, tension, agitation, suspicion, seclusiveness, an active paranoid trend and somatic preoccupation. A diagnosis of dementia præcox, paranoid type, was made.

Insulin treatment was started May 1, 1937. The course consisted of 32 treatments, 12 of which produced comas; there were no convulsions. The average coma dose was 260 units. The first improvement was noted at the thirteenth treatment, at a precoma level. During shocks early in the course, prior to the appearance of comas, he frequently revealed a strong homosexual conflict and doubts about his own sex. Comas were never particularly deep, but the later ones were quiet and placid. At the end of the treatment he was friendly, cheerful, sociable, behaving excellently, exhibiting no trend, nor any apparent emotional conflict. There was a fair degree of insight. He was paroled July 2, 1937, and quickly obtained a good position. His wife stated that his personality was much better than at any time since she had known him. There were no paranoid tendencies, and no apparent jealousy or excitability. The patient stated that he himself "felt" a personality change, in that he was more settled, more considerate and no longer sensitive or suspicious. In February, 1928, he obtained a very good position entailing much responsibility. Since this new position necessitated his leaving the State, he was discharged March 11, 1938, as recovered.

Later information concerning this patient indicated that his "excellent condition" lasted only two months. He then began to show his previous traits of irresponsibility, alcoholism, jealousy and suspiciousness without becoming actively psychotic. The true state of affairs was deliberately concealed from us by both the patient and his wife and did not come to our attention until two months after his discharge.

The second case was that of a male, aged 38, admitted to the Rochester State Hospital, April 5, 1937. His wife, reliable and

cooperative, offered a fairly complete history. Following a grade school education, the patient worked in several factories for a time and then obtained a position as chauffeur, which he held until the death of his employer. He then worked as an independent taxicab driver but was unsuccessful. For the past seven years he sold kitchen utensils from door to door, obtaining a bare living. There are three children, of ages 10, 8 and 4. In temperament, he was described as having been of a seclusive and depressive type. He was a quiet, retiring, asocial individual, who never wished to visit at other people's homes, nor to have them visit at his own. He was sensitive, fussy, and meticulous to a pronounced degree. He was always shielded and protected by his mother and she gave him everything she could possibly supply. He displayed interest in nothing beyond his home and work. He fervently declared that he was very fond of his wife and children, but he was very jealous of his wife and wished to monopolize her entirely, even to the exclusion of all her female friends. Occasionally there were moods of depression during which he wept easily whenever troubled. The onset of his psychosis appeared approximately three and one-half years prior to admission. There were many periods of moodiness and weeping, with accusations of infidelity and threats of bodily harm against his wife, followed by remorseful apologies. At one time he menaced her with a loaded gun. His attitude of suspicion became heightened and continuous. Gradually ideas of reference and of persecution appeared. He thought that the police were after him, that he was being plotted against; several times he threatened suicide. Following admission to the hospital he exhibited worry, depression, some bewilderment and much self-pity, but there was a definite degree of emotional shallowness and inadequacy. There was some motor retardation. His trend revealed marked ideas of reference, ideas of persecution and much environmental misinterpretation. A diagnosis of dementia præcox, paranoid type, was made.

Insulin therapy was begun September 7, 1937. The course consisted of 24 treatments, in 19 of which there were comas; there were no convulsions. Struggling and restlessness were prominent in early comas, while the later ones were calm and placid. The first

improvement was noted at the third treatment, prior to the appearance of comas. At the cessation of treatment he was sociable, agreeable, pleasant and cooperative. In attitude he was self-confident and definitely euphoric. There was a moderate degree of insight in that he showed some realization of the falsity of his former delusions. Following his parole October 17, 1937, his wife was amazed at his personality change. Instead of being asocial, moody, self-centered, suspicious and seclusive, he was unusually sociable, very cheerful and elated, garrulous, bombastic and boastful. He was overactive to a hypomanic degree, and seemed to require much less sleep. He was no longer critical or irritable and, in fact, treated many situations with unusual levity.

In the latter part of December, 1937, he was definitely grandiose in his evaluation of his own abilities. He displayed definitely poor business judgment as shown in several of his absurd financial arrangements. He was overproductive in speech, hypomanic in manner and behavior, and domineering and exalted in attitude. The paranoid trend concerning his wife reappeared, but it was not displayed so overtly nor so frequently as before. He was returned from parole February 14, 1938. At this time he talked about several impractical, grandiose business schemes, which he was certain would be successful. He soon became angry over his detention and showed an antagonistic, contemptuous, haughty attitude towards everyone, although remaining superficially polite. He renounced his wife and displayed no insight. There has been no further change at the present writing.

The third case was that of a male, aged 28, admitted to the Rochester State Hospital, August 8, 1937. His wife, dependable, intelligent and cooperative, was the informant. Following high school graduation the patient became employed at road construction and in a few years worked his way up to a responsible position. In 1935 he entered the oil business, chiefly concerned with promotion work. Temperamentally he was a reserved individual who neither cared for nor indulged in social activities. He was an overactive, rather "nervous" and worrisome type. He drank heavily, supposedly because it was expected of him in his particular business.

The onset of his psychosis appeared about three months prior to admission, while he was on vacation in Florida. Several factors seemed to weigh heavily on him; he was greatly worried about his wife's first pregnancy and also about the serious illness of a relative. He drank more than usual and emotionally he was unstable and irritable. Following his return home he became quite ill. He soon developed an overwrought, agitated behavior and became very difficult to control at home. Ideas of reference and persecution, and auditory and visual hallucinations appeared. Following admission to the hospital, he was suspicious, disdainful, arrogant, uncommunicative and seclusive. His well-systematized trend revolved around a very close male friend. Auditory hallucinations were vivid and visual hallucinations were present. In addition there was some somatic preoccupation. His sensorium seemed normal throughout. A diagnosis of dementia præcox, paranoid type, was made when his psychosis showed no signs of abatement over a period of two months.

On November 1, 1937, insulin treatment was started. The course consisted of 13 treatments, in five of which there were comas; there were no convulsions. The first improvement was seen at the fifth treatment, at a precoma level. The first three comas were restless; the last two were calm, deep and placid. At the cessation of treatment he was agreeable, pleasant, carefree, cooperative, and his sociability was remarkable. His discussion of his previous symptoms was quite satisfactory. After his parole on November 28, 1937, his wife informed us that he showed a definite personality change. He was always agreeable, pleasant, even jolly. The most unusual change was his interest in social activities. His wife was greatly pleased by his new attitude toward life. A physician, from the town where the patient resides, remarked that there had been a notable improvement in the patient's personality in contrast to his behavior during the 15 years of their acquaintance. At the present time he is getting along very well, is actively engaged in business, abstaining from alcohol, and appears to be free of his previous symptoms.



## COMMENT

These three cases show many points of similarity. They are all males, all married, all either in or very close to the fourth decade of life. All three portrayed a definitely introverted type of personality. There were many schizoid traits, with a common dislike for social activities and a more or less paranoid outlook. Two of these patients were intemperate over a number of years.

Further resemblances were noted during the actual psychosis. There were suspicion, agitation and fear, appropriate to the respective trends in all three. In the two cases of shorter duration, under one year, the response was adequate; in the other, of a duration over three years, the response tended to be shallow and inadequate. Ideas of persecution were fairly well systematized; bizarre and archaic delusions were absent. The course of insulin treatment was short in all three. Each exhibited improvement at an early period, prior to the appearance of comas.

Following treatment, they all displayed personality changes from a schizoid makeup to that of an overt, sociable, well-balanced attitude. The temporary nature of the favorable change in the first two cases illustrates the fallibility of any conclusions advanced at the time patients leave the hospital.

## SUMMARY

Some interesting results of insulin shock treatment in three cases of paranoid dementia præcox are reported. Each case had certain well-marked schizoid prepsychotic personality traits. After the treatment, which seemed successful in each case, there was evidence that these schizoid traits had disappeared or had been modified. In one case the schizoid personality traits reappeared after two months without recurrence of active psychotic symptoms. The second case became psychotic again but in an extroverted, hypomanic way which contrasted strongly with his previous personality and psychotic reaction. In the third case the sociable, well-balanced attitude continues.

## OCCURRENCE OF RELAPSES IN PATIENTS TREATED WITH INSULIN HYPOGLYCEMIC SHOCK\*

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In an evaluation of insulin therapy in the psychoses, there are two questions of prime consideration. First, does this therapy produce more recoveries or states of improvement than would have spontaneously occurred in the course of the disease syndrome? The available statistics indicate that the majority of investigators would probably answer this question in the affirmative. This is in keeping with the results reported concerning the first 1,039 cases treated in the New York State hospital system as compared to a similar number of untreated cases. The improvement rate in this group of treated cases is roughly about three times that of the spontaneous recovery rate. The results obtained in our group of cases at present tend to indicate that insulin treatment may hasten improvement or shorten the duration of an attack, especially in cases where the duration of illness is less than six months to one year. In a much smaller percentage of cases improvement occurs where the illness is of two to three years duration and occasionally even longer. Admitting that insulin therapy is effective in shortening the period of illness in some cases, the second question requiring consideration pertains to the permanency of the results obtained. Regarding this point, a review of the literature reveals a marked paucity of information and the facts will be obtained only if a close followup contact is maintained for long periods after the therapy has been discontinued and the patient has been sent home.

In institutions with a special setup, it is easier to maintain contacts with individual patients but even here some patients are lost track of or are heard from infrequently. At the Psychiatric Institute, all patients who are subject to special therapy are now assigned to the social service department while they are in the hospital and are followed by the social worker, as well as by the physician. This method facilitates the followup. Wherever possible, the patients report personally at short intervals but since most of

\*From the departments of clinical psychiatry and internal medicine of the New York State Psychiatric Institute and Hospital.

them are on a voluntary basis, many, although seen by the social service department frequently, refuse to come to the hospital for a personal interview.

Because insulin therapy has been in general use in this country only slightly more than one year, it is natural that one could learn little from published material about the permanency of the recoveries in this country. A little more information is available in the European literature where the treatment has been used since 1934. Dussik<sup>1</sup>, reporting on the first 10 patients treated by Sakel and himself, three to three and one-half years after treatment was completed, gave the following figures: Of the 10 patients, at the time treatment was completed, seven showed full remissions, two social remissions and one was unimproved. At the end of the three to three and one-half year period, of the seven complete recoveries, five maintained this status, one relapsed and committed suicide, and one relapsed but was treated as an ambulatory case with recovery. The two with social remissions remained unchanged, as well as the one that was not benefited by the treatment. Thus at the end of three years, eight of the original 10 were well.

Other observers who have reported on the relapse rate of treated patients also show only a small percentage of relapses.

Frostig<sup>2</sup> noted four relapses in 27 cases, or 14.8 per cent, in which complete remission had occurred. Two of these treated a second time, again with recovery. Béno,<sup>3</sup> in a total of 35 cases of complete and incomplete remission, observed five relapses, or 14 per cent. Müller,<sup>4</sup> in the largest series published, of 200 cases of complete and social remission, reported 13 relapses, or 6.5 per cent. Both Béno and Müller noted that the tendency to relapse was greater in individuals whose illness was of longer duration than one year prior to treatment, and in those in whom only mild degrees of improvement had taken place. Müller reported 14 relapses in 106 such cases, a relapse rate of 13.1 per cent. This was twice as high as in the cases in which a substantial or complete improvement had occurred and where the illness was of less than six months duration. The longest remission up to the time these cases were reported was one and one-half years except for the original 10 cases of Sakel and Dussik.

To sum up, of a total of 262 cases from the literature, 22 have relapsed, a rate of 8.4 per cent.

Cameron and Hoskins<sup>5, 6</sup> at the Worcester State Hospital note that relapses are more frequent than indicated above. Although specific figures are not given, they stated that relapses are of frequent occurrence and mentioned that eight out of 20 treated cases had a tendency to relapse.

From our own experience, the figures, although small, would indicate a percentage of relapses higher than those given above. Of 67 cases treated, there were 31 (20 recovered and 11 much improved) complete and social remissions. Most of the recoveries were sick for less than one year. Of these 31 cases, there have been eight relapses. Six of these were from the group of 20 considered recovered and two were from the group of 11 considered much improved. The tendency to relapse was greater among the female patients (seven females and one male).

Of the 20 females (15 recovered and five much improved), seven have relapsed. Six of these had been ill less than one year and four less than six months, that is, very early cases of dementia præcox. Two of the seven cases relapsed within a month after leaving the hospital; the others, three, four, seven, 10 and 10 months respectively.

Two patients (one catatonic and one paranoid, each of about seven months duration) showed a greater tendency to relapse than the average. They had responded well to therapy but had relapsed within a month after treatment was discontinued. With further insulin therapy they improved again and once more relapsed when treatment was stopped. One had three such relapses before she appeared well. She has now been out of the hospital for seven months but does not seem entirely well. Recently she complained of fatigue and long dizzy spells with sleepy feelings during the day and inability to sleep at night. Similar complaints had preceded her former relapses. Physical examination a few days ago revealed a left Hoffman and Babinski sign. Otherwise the neurological examination was negative.

The other patient has also shown a marked tendency to relapse and has had four successive courses of treatment, improving al-

most to the point of recovery with each course. Within two or three weeks after treatment, her former symptoms and complaints would reappear, only to disappear shortly after insulin therapy was resumed. Injections of saline for a period of two weeks as a control did not produce an amelioration of the symptoms. At present, the patient is receiving her fourth course of insulin therapy and has had over 150 treatments. She is again much improved but treatment has been prolonged in the hope that her former complaints will not return as soon as treatment is stopped.

Four of the six women whose recovery was followed by relapse showed an unusually rapid response to therapy and consequently their course of treatment was short, that is, an average of about 30 treatments and 20 comatose states. It is impossible to state whether relapses would have occurred if treatment was carried out longer. Other cases with similar, or even shorter terms of therapy have to date remained well.

Of the eight patients who relapsed, two were retreated and again reached their maximum level of improvement. Both of these have been on parole now about seven months. Four of the cases are still receiving their second course of treatment and again seem to be improving. Two have shown no favorable response to the second course. One is a hebephrenic of six years duration who was much improved after the first course of treatment but who now is unimproved following a full second course. The other, a catatonic patient of only two months duration, who rapidly improved to the point of recovery but relapsed after four months while still in the hospital, failed to respond to a second course. Both are being treated now with metrazol.

These eight cases with relapses among 31 who had recovered or had shown considerable improvement, do not include three or four other cases. The latter exhibited a striking improvement early in the course of therapy, which improvement was transitory, lasting only several days to a week, and then as treatment was continued, reverted to their former states. Such cases were considered unimproved at the time therapy was terminated and are not considered relapses. This term is applied only to those patients who showed



definite improvement at the time treatment was discontinued and subsequently became worse.

Below in Table 1 are summarized the cases of relapses reported in the literature.

TABLE 1

	Number of cases recovered and much improved	Number of relapses	Per cent
Béno .....	35	5	14.0
Frostig .....	27	4	14.8
Müller .....	200	13	6.5
Horwitz, Blalock, Harris .....	31	8	25.8
Total .....	293	30	10.2

## SUMMARY

From our experience, we are inclined to feel that insulin therapy may serve to bring about a higher percentage of remissions, especially in early cases. Still, in a considerable percentage of improved patients, relapses occur within several months to one year after treatment has ended.

To date, eight out of 31, or 25 per cent, have relapsed and it seems reasonable to assume that there will be others.

When relapsed patients are treated again, the majority show favorable responses. However, the ultimate outcome of treatment must yet await the test of time and these individuals should be followed closely in order that one may learn the permanency of the results.

No criteria are available as to the type of patient that will relapse. It has seemed reasonable to expect that the longer the patient's illness existed prior to treatment, the more likely would be the possibility of relapse. From our own experience in a small number of cases, this has not been borne out. A majority of the relapses have occurred in individuals whose duration of illness has been comparatively short and whose response to therapy seemed most satisfactory.

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# ELECTROCARDIOGRAPHIC STUDIES OF PATIENTS RECEIVING CONVULSANT DOSES OF METRAZOL IN THE TREATMENT OF SCHIZOPHRENIA\*

## *A Preliminary Report*

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Due to unavoidable circumstances it has been impossible to carry this study to the point originally planned to have been reached at this time and therefore what is being presented must be considered in the nature of a preliminary report. It is hoped that the accumulation of data will be continued and presented in a future report. At this time I shall present the findings to date, realizing fully that they are insufficient to permit the drawing of conclusions. They may, however, have suggestive value.

The therapeutic uses of metrazol as a cardiac and respiratory stimulant preceded its employment as a convulsant. It is only within the last two years that it has come into use in this country as a convulsant in the treatment of schizophrenia, although it had been employed prior to that time in Europe for the same purpose in the form of Cardiazol. However, the convulsant dose as used in the treatment of schizophrenia is many times that of the therapeutic dose.

During the course of these metrazol treatments of schizophrenic patients at Harlem Valley State Hospital it became a matter of interest to determine what if any effect on the heart was produced by the use of convulsant doses of the drug. A review of the literature did not reveal any references to electrocardiographic studies of the effects of metrazol. For this reason the present studies were planned. Tracings were made on each patient of Leads I, II and III just prior to injection to serve as the normal for that patient and then Lead II was recorded from the time of the beginning of injection continuously throughout the convulsion and for a variable period of time following the convulsion. The procedure called for these tracings to be made at the time of the first, tenth and twen-

\*Grateful acknowledgment is made to Dr. Arthur Geiger, cardiologist, at New Haven Hospital, New Haven, Conn., for his suggestions and criticisms.

tieth treatment, which latter one terminates the course. Treatments were given three times weekly on alternate days. All patients studied were females.

To date we have obtained the following data:

Patient L. B. Age 26—

*First treatment:*

Before injection—normal EKG; PR interval=0.18.

After injection (5 c.c. 10 per cent metrazol)—Immediately following convulsion P became inverted and PR interval was shortened to 0.14. This phase, indicating a shift of the pacemaker to an ectopic focus away from the usual point of origin in the SA node, lasted only a few seconds, giving way to a normal EKG for a period of about 20 seconds. Again there followed a second period of about 30 seconds during which the P wave became inverted and the PR interval shortened with the presence of a moderate number of premature auricular beats, followed by a return to normal.

*Tenth treatment:*

Before injection—normal EKG; PR interval=0.18.

After injection (7 c.c. 10 per cent metrazol)—No abnormalities were noted until about 1 minute after convulsion when PR interval suddenly lengthened to between 0.22 and 0.28 with occasional complete AV block and occasional premature auricular beats. These abnormalities remained until the end of the tracing with no return to normal (about 45 seconds).

*Twentieth treatment:* (No convulsion was obtained at the twentieth treatment and an extra injection was given on the following day. The tracing actually represents the twenty-first treatment.)

Before injection—normal EKG; PR interval= 0.18.

After injection (10 c.c. 10 per cent metrazol)—About 12 seconds after convulsion P waves became smaller in amplitude and PR interval was shortened to 0.12. There was an occasional premature ventricular beat, a slight ST depression and an increase in amplitude of T waves. This period lasted for about 30 seconds, after which the tracing became normal again.

Patient W. K. Age 28—

*First treatment:* No convulsion was obtained.

*Tenth treatment:*

Before injection—normal EKG with flat T waves in Lead III; PR interval equalled 0.12. Amplitude of T waves in Lead II was 1 mm.

After injection (8 c.c. 10 per cent metrazol)—Immediately after convulsion T waves increased in amplitude to 3 mm. and ST segments fell 1 mm. below isoelectric level. PR interval decreased to 0.10. This phase lasted until the end of the tracing (about 1 minute).

Patient B. N. Age 32—

*First treatment:*

Before injection—normal EKG; PR interval=0.14.

After injection (6 c.c. 10 per cent metrazol)—SA tachycardia appeared immediately after convulsion accompanied by auricular premature beats and very occasional ventricular premature beats. The PR interval remained as before injection. This phase lasted throughout the tracing for about 1½ minutes.

The data so far obtained suggest that:

1. Convulsant doses of metrazol produce abnormal changes in the conduction system of the heart.
2. These changes appear to be variable in character.

Whether or not these changes are temporary or permanent remains to be determined.



## CONVULSIONS IN SCHIZOPHRENIA

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The occurrence of convulsions as one of the physical symptoms of schizophrenia is not seen frequently. In fact, where definite convulsions of the grand mal type do appear the diagnosis of schizophrenia is questioned. Occasionally, in patients who are seen at staff meeting for the purpose of diagnosis, the history of a convulsion causes considerable clouding of the picture. These patients would, on the bases of their reaction, be unhesitatingly diagnosed dementia præcox but for this disturbing factor. It has been felt for a period of time that convulsive seizures occur with sufficient frequency in cases of schizophrenia for this symptom to be considered more seriously as one of the physical symptoms of the disorder. Such observations are particularly interesting at the present time because of the occasional presence of convulsions in the hypoglycemic treatment and their regular appearance in metrazol therapy. The literature has been very contradictory on convulsions in schizophrenia and textbooks usually dismiss the symptom with a line or two. Bleuler states, "Real convulsions occur in catatonic and hysterical states."

In the theory of the actions of the metrazol treatment it has been stated that convulsions are inimical to catatonic state. It would appear, therefore, that to accomplish an improvement in such states all one would have to do would be to institute a series of convulsions. It is, however, felt that the matter is not quite so simple as this and that the introduction of convulsions does not constitute the entire therapy. Also the occurrence of convulsions in rather long-standing cases of schizophrenia tends to negate this part of the theory. It was with the object of demonstrating convulsions as a symptom in schizophrenia that 10 cases were selected and will be described.

Before the cases are described a brief review of theories current at present might be instructive. While many theories have been advanced the etiology is still obscure and much remains to be done to determine a definite cause or causes.

1. *Irritation Theory:* This is based on the idea of excessive stimulation of the cerebral efferent mechanism; that is, it is a violent discharge of motor impulses from the Rolandic area—at first a simultaneous discharge causing the tonic spasms and later an intermittent discharge causing the clonic spasms. This theory, however, does not explain the cause of the excessive irritation or stimulation.

2. *Release Theory:* This is really the reverse of No. 1 and is based on the premise that a convulsion occurs if the higher centers are markedly inhibited, freely permitting lower motor centers to discharge motor impulses. This theory has the same objections as No. 1, in that the cause for the marked inhibition is unexplained. However, certain factors tend to show that inhibition of higher centers may be one of the causes. The sequence of the convulsions seems to indicate that the control of the motor apparatus gradually passes from higher to lower centers. Briefly, the tonic spasm corresponds roughly to the state of decerebrate rigidity. Certain types of movements, not of a very complex character, can be initiated in the anterior horn cells. More complex and certain pattern movements can originate in the midbrain and basal ganglia.

3. *Short Circuit Theory:* This states that motor discharge may at times take shorter and less complex paths, with a spread of impulses, so that a greater part of the motor apparatus is effected. This is really another form of the release theory, but is particularly interesting at present because of Sakel's theory of the action of the insulin in hypoglycemic treatment. Sakel feels that perhaps in schizophrenia impulses become routed along different pathways leading to abnormal behavior and that the insulin shock reroutes them along the normal channels. More complex routes result again with normal adult behavior.

4. *The Constitution Theory:* This theory states that the individual is physically and psychically so constituted that he is practically condemned to an extreme compensating state that requires a convulsion as a means of escape (L. Pierce Clark). This theory parallels in part that of Goldstein's "catastrophic situations," in which an individual who has received some brain damage is able to adjust on a lower plane but shows evident confusion and block-

ing when confronted with situations he is unable to master. The constitution theory is also compatible with the psychoanalytic explanation of the convulsive states. Clark speaks, in a general way, of a return to the infantile unconscious, even to the foetal stage, and he brings the convulsive seizures into analogy with foetal movements. An extreme regression, such as this, is only approximated in catatonic states. From this viewpoint the convulsive seizure is an extremely regressive symptom. This is also supported by the fact that convulsions are more easily induced in young children and infants. From the above statements we might assume that a convulsive seizure is more likely to occur when integration is definitely affected as in schizophrenia and when a certain amount of regression has taken place. Therefore, the convulsive seizures may be considered as a secondary type of symptom, to be looked for when the process of schizophrenia has developed to a certain degree. That is, the convulsive state when it does occur in schizophrenia is more likely to appear when the patient has shown some regression and is confronted by a more taxing situation. He is unable, with his limited capacity, to adjust thereto. Because of this inability to adjust a rapid regression may result in a convulsive attack.

Very little more is offered by pathology on the causation of convulsive seizures. Frequently no pathology whatever can be demonstrated in brains of patients who have had convulsions for years. Sclerosis of Ammon's horn is found in a fairly large number of brains of epileptics, but whether as a cause or effect is unknown. Other pathological findings are also indefinite, such as glial proliferation in the external layers of the cortex, narrowing of arteries and other vascular changes. Various physiologic states, such as hydrogen-ion concentration of the blood, acidosis, hydration of tissues, anemia of the brain, increased intracranial pressure, sodium chloride retention, hyperpnoea, et cetera, increase the liability to convulsive states. These, however, serve only to lower the threshold for the irritating cause.

From the numerous theories advanced it becomes obvious that the actual cause of the convulsive seizure is not yet definitely known, that it is probable we are dealing with a number of condi-

tions and that the term "epilepsies" may be used quite reasonably. More definite, however, is the fact that the convulsive seizure is a discharge of a more or less definite motor pattern and in this respect is somewhat related to tics and habit spasms. It may be that the oftener this motor pattern is discharged the greater the liability to recurrence. It is interesting to conjecture on the possible effects of induced convulsions, as seen in the metrazol treatment. When sufficient data are obtained it will be more interesting to correlate the incidence of convulsions during induced insulin shock in cases of schizophrenia with improvement rates.

#### CASE MATERIAL

Ten cases of schizophrenia exhibiting convulsive attacks will be discussed briefly. An attempt will be made to show that they are typical and to leave little doubt as to the proper diagnosis. They show a beginning of the convulsive seizure after definite recognition of schizophrenia.

In selecting the cases care was taken to include only those that showed convulsions of the typical idiopathic type. Care was taken to exclude older cases of dementia præcox, which might have developed convulsions on an arteriosclerotic or other organic or toxic basis.

1. W. H. P. White male, admitted to the Buffalo State Hospital at the age of 19. Onset of psychosis 1 year 3 months prior to admission. Seclusive personality. Psychosis began to manifest itself while in the army. Companions noticed peculiar behavior. He had to be forced to take a bath and threatened suicide. In hospital patient was apathetic, sat about paying no attention to environment, seclusive, not spontaneous and answered questions in monosyllables. Manneristic, grimaced and admitted hallucinations in the form of voices calling him bad names and cursing him. He was paroled to the custody of his stepfather after a stay in the hospital of one month. He was readmitted six years later and is still in the hospital showing essentially the same picture as on first admission. About a year after second admission patient had a severe convulsion of the grand mal type. In 1937 he had 12 convulsions at irregular intervals.

2. O. T. White female, admitted to the Buffalo State Hospital at the age of 23. Onset of psychosis given as seven years prior to admission. She had two prior admissions to Providence Retreat. Diagnosis: dementia præcox, hebephrenic type. In hospital her behavior was very silly and childish. She was usually mute and would sit for long periods covering her face with her hands. At times she would assume crouching postures. She was very negativistic, resisting every attempt at care and attention. The patient had maintained this type of reaction for 26 years when convulsions of the grand mal type started, averaging five seizures a month for five years, when they ceased spontaneously and had not reappeared when the patient died 20 months later. (Tuberculosis.)

3. K. L. White female, admitted to the Buffalo State Hospital at the age of 31 years. Onset of psychosis given as six years prior to admission. One previous admission. Diagnosis: dementia præcox, paranoid type. In the hospital she was actively hallucinated in the auditory field, hearing neighbors' voices on the radio that told her that her sister was dead. During her stay in the hospital patient gradually became irritable, at times becoming abusive, and scolded frequently. She frequently exhibited ideas of reference, felt other patients and attendants were talking about her. Convulsions of grand mal type began 10 years later and continued at infrequent intervals.

4. L. M. White female, admitted to the Buffalo State Hospital at age of 27. Onset of psychosis given as three years prior to admission, but obviously of much longer duration. She had always remained at home and was regarded as "peculiar;" was shy and seclusive, did not care for company and did not visit any one. Wore outmoded clothing. Diagnosis: dementia præcox. In the hospital she was restless and assaultive. Her remarks were irrelevant, rambling and she referred to herself in the third person. She stated that she was married, had a dozen children and as much money as Rockefeller. Smiled and grimaced in a childish manner, was hallucinated, stating she heard her mother's voice. Convulsions began after a period of 15 years and were of the grand mal type and patient has averaged four convulsions a month.



5. J. G. White female, admitted to the Buffalo State Hospital at age of 36. Onset of psychosis eight years prior to admission. Diagnosis: dementia præcox, paranoid type. Seclusive personality. At time of onset attempted suicide by hanging, felt her husband was unfaithful and that he was trying to poison her. She went about telling the neighbors that the youngest child was illegitimate. Hallucinated freely, heard God talking to her, telling her He would help her. In the hospital she was irritable, resistive and suspicious of all attention. She continued to hallucinate, became very silly and irrelevant in her talk. At times was assaultive, at other times quite affectionate to other patients. One grand mal seizure occurred in December, 1936, and another in June, 1937, one year after admission.

6. L. F. White female, admitted to the Buffalo State Hospital at age of 26. Onset of psychosis given as 15 years prior to admission. Diagnosis: dementia præcox, paranoid type. Married, has eight children. Prior to admission was silly, laughed a good deal and frequently told neighbors she was a saint. She would wander away and leave her children uncared for. In the hospital she was untidy, collected rubbish, gave vague and indefinite reasons for this. She decorates herself with bits of colored rags. Frequently uses very vulgar language. At times she states that she sees God in the sky. He talks to her. Convulsions of the grand mal type began seven years after admission, at the age of 34 years, and have continued at irregular intervals.

7. M. K. White female, admitted to the Buffalo State Hospital at the age of 24. Diagnosis: dementia præcox, catatonic type. Seclusive personality. Onset of psychosis was slow. She gradually withdrew from her environment, lost interest in everything. Following death of a sister changes became more marked. She began to have somatic complaints, would clutch at her heart and spoke of a fear around her heart. Her replies became irrelevant and she finally became mute. In the hospital, patient kept her eyes shut, assumed awkward and constrained positions, was restless, disrobed and pulled the bed apart. Frequently went through stereotyped movements. Seven days after admission patient had two convul-

sive seizures of the typical grand mal type, and on the following day one more. There had been no previous history of seizures. Because of these seizures the original diagnosis was psychosis with convulsive disorders, epilepsy. She has had in all four convulsions. However, her reaction remained typically schizoid and diagnosis was changed to dementia præcox, catatonic type. Permission was obtained for hypoglycemic treatment. This was started on June 16, 1937. She received a total of 34 injections, maximum dose being 110 units of insulin. She was in coma 28 times. No convulsions observed during the treatment. She showed improvement following the treatment and was paroled. She remained home for two weeks, but had to be returned because of recurrence of all previous symptoms. It is interesting to note that this patient was diagnosed dementia præcox at the Buffalo City Hospital.

8. F. B. White male, first admitted to the Buffalo State Hospital at the age of 25. Onset of psychosis given as one year, five months, prior to admission. Diagnosis: dementia præcox, catatonic type. Patient was of seclusive makeup, had convulsions at age of nine months, and at four years following measles. Psychosis was of gradual onset. He became more seclusive, sat about the house, showed many mannerisms and was resistive to care and attention. In the hospital he would stand about, complained of possible sexual assaults. He was paroled and discharged as unimproved. He was readmitted in 1927, when his picture was similar except that he appeared to be actively hallucinated in the auditory field. He began to have seizures of grand mal type in 1931, averaging about one convulsion a month. Because of these seizures the diagnosis was changed to psychosis with convulsive disorders, epilepsy.

9. J. M. White female, admitted to the Buffalo State Hospital at the age of 31. Diagnosis: dementia præcox, catatonic type. Married, has three children. Onset given as 10 months prior to admission following birth of an unwanted child. Patient began to complain of lack of money, excessive work, and wanted many things without which she had apparently been contented before illness. Patient began to express ideas of infidelity directed against her husband. When the patient improved following treatment she

admitted being unfaithful to her husband for a considerable period of time. In the hospital patient showed considerable blocking and catatonic stupor. She appeared quite perplexed, had to be dressed and undressed. One week after admission patient had two grand mal seizures. Patient received metrazol treatment, experiencing 17 seizures. Improvement followed and patient was paroled.

10. R. H. Young white female, first admission to the Buffalo State Hospital at age of 17. Diagnosis: dementia præcox, catatonic type. Onset of psychosis two years prior to admission. She was of a seclusive personality, inclined to stay at home. In the hospital after admission patient was mute, assumed rigid attitudes and at times laughed for no apparent reason. She was uncooperative, muttered in an unintelligible manner. Became untidy and destructive, necessitating a strong dress. She later made a satisfactory hospital adjustment and was permitted to leave on parole. She was readmitted in January, 1938, after a recurrence of symptoms. At this time she was silly, overactive, talking and laughing to herself. Had to be cared for in continuous baths. One convulsion on January 18, 1937, grand mal type, none since. Patient was given hypoglycemic therapy. She received 23 injections of insulin, maximum dose 160 units; because of poor veins patient did not go into coma. No convulsions occurred during the hypoglycemic treatment.

#### SUMMARY

1. It is felt from the above series of cases that convulsions of the grand mal type do occur in cases of undoubted schizophrenia.
2. While the series is small, it is felt that many others may be observed from time to time.

## PSYCHOLOGICAL PERFORMANCE TESTS AS PROGNOSTIC AGENTS FOR THE EFFICACY OF INSULIN THERAPY IN SCHIZOPHRENIA

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The use of insulin therapy in schizophrenia has received wide attention in medical circles as a most promising therapeutic method. The treatment was first used by Sakel in 1928-1933 and has since been extensively used upon mental patients in this country. However, after several years of application of the method as described by Sakel,<sup>1</sup> we know that approximately 56-66 per cent of cases are benefited while 34-44 per cent show no improvement under this treatment (Malzberg<sup>2</sup>).

So far the selection of patients who are to receive insulin treatment has been rather arbitrary or guided by chance factors rather than by any more exact method. In general we know that "a relatively high percentage of certain types of patients will show clinical improvement at least for a period of time" (Lewis<sup>3</sup>). Sakel<sup>1</sup> and many other investigators have stated that prognosis under insulin therapy is best in those cases of schizophrenia of recent onset, showing acute symptoms, and occurring in fairly young individuals. However, both improvements and failures frequently occur both inside and outside the range of this general standard of selection.

During the past year the department of psychology at the New York State Psychiatric Institute, under the joint direction of Drs. C. Landis, K. Goldstein, and Z. Piotrowski, has conducted a program of investigation of psychological changes following the application of insulin in schizophrenia. Among the tests we have used have been a modification of the Vigotsky test of concept formation, the Weigl test, and the BRL sorting test. The first-mentioned test, described in a recent publication by Hanfmann and Kasanin,<sup>4</sup> consists in the development of an artificial concept through the sorting of different kinds of blocks. The "score" in this test is based on the amount of time and help needed for correct solution. The

TABLE 1

No.	Sex	Age	Duration of psychosis	Type of onset	Prognosis	Type of schizophrenia	Vigotsky test	Weigl test	BRL sorting test	Outcome of treatment
1.	M	27	156	S	P	H	3	2	4	Imp.
2.	F	26	24	S	F	H	2	1	3	Imp.
3.	F	18	18	S	P	P	2	1	2	Imp.
4.	F	28	36	S	P	S	3	2	4	Imp.
5.	M	15	24	S	P	H	3	2	4	Imp.
6.	M	18	6	A	F	S	3	2	4	Sl. imp.
7.	M	29	36	S	P	H	3	2	4	Sl. imp.
8.	M	18	48	S	P	H	3	2	4	Sl. imp.
9.	M	19	84	S	P	P	3	2	2	Sl. imp.
10.	M	24	12	S	F	H	2	1	2	Sl. imp.
11.	M	19	8	S	P	P	3	1	2	T. imp.
12.	F	23	36	S	P	H	2	1	3	T. imp.
13.	F	16	24	S	P	M	2	1	3	Un.
14.	M	25	30	A	P	H	2	1	3	Un.
15.	M	19	30	S	P	H	2	1	3	Un.
16.	M	15	9	S	P	H	2	1	2	Un.
17.	M	38	96	S	P	H	1	1	1	Un.
18.	F	23	1	A	F	C	1	0	1	Un.
19.	F	28	1	A	F	H	1	0	1	Un.

## KEY

Type of onset: S=Slow, A=Acute.

Prognosis: P=Poor, F=Fair.

Type of schizophrenia: H=Hebephrenic, P=Paranoid, C=Catatonic, S=Simple, M=Mixed.

Vigotsky test: 1=Failed to complete test, 2=Below average of group, 3=Above average of group.

Weigl test: 1=One category used, 2=Two categories used.

BRL sorting test: 1=One category used, 2=Two categories used, 3=Three categories used, 4=Four categories used.

Outcome of treatment: Imp.=Improved, Sl. imp.=Slight improvement, T. imp.=Temporary improvement followed by a marked relapse, Un.=Unimproved.



Weigl test and the BRL sorting test have been described in an earlier publication (Bolles<sup>5</sup>). The Weigl test consists of simple geometrical figures of different colors which can be sorted either according to their form or color. The BRL sorting test (patterned after the test used by Weigl<sup>6</sup>) consists of a large group of miscellaneous objects which permit a wide range of classification on the basis of size, color, use, material, form, etc.<sup>7</sup> Some capacity for abstract behavior is required to sort these objects according to these general categories on successive trials, and to recognize the basis of these categories. A certain amount of cooperation from the patient is required. We used these tests because the previous investigations of Vigotsky,<sup>8</sup> Hanfmann and Kasanin,<sup>4</sup> Bolles and Goldstein,<sup>9</sup> have shown that such tests applied to schizophrenic patients reveal characteristic differences from normal individuals. These patients show an impairment of "abstract behavior" or "conceptual thinking" and tend to respond in a concrete way. On simple object sorting tests the normal adult may respond either to the peculiar or unique attributes of the objects or to the general category to which the objects belong. The schizophrenic patient tends to respond to specific attributes of individual objects and fails to respond to general categories. Many of the patients studied were unable to shift voluntarily from one aspect of the test situation to another while the normal adult, capable of abstract behavior, carries out this shift in attitude without difficulty.

The subjects tested were 19 schizophrenic patients who had been accepted for insulin therapy. The present discussion is based on the results of the tests administered before insulin therapy was started.

### *Results*

The results of the tests and personal data from the case histories are given in Table 1. The duration of the mental illness refers to the number of months since the onset of the first mental symptoms. It is noteworthy that in this particular group those patients whose test performances were relatively poor did not improve under therapy. Those patients whose performances were superior (relative to the group) showed the most improvement. The number of improve-

ments under insulin therapy seems related to the quality of performance on the simple psychological tests administered before the inception of the treatment.

As pointed out in earlier publications, Bolles<sup>5</sup> and Bolles and Goldstein,<sup>6</sup> sorting tests of the type described allow a differentiation between the capacity for "abstract" and "concrete" behavior. Tests made up of steps of varying difficulty indicate that there is probably a continuum ranging from the most concrete to the higher levels of abstract performance. The three tests applied seem to be adequate to demonstrate impairment in this continuum.

Performance on these tests show a closer relation to the outcome of treatment than does the duration of the psychoses. Sakel<sup>1</sup> has stated that prognosis is best in those cases of six months or less duration. The duration of the psychosis in our particular group was not related to the occurrence or amount of improvement. Of those rated "Unimproved" the range of duration was from 1-96 months, of those "Slightly improved" 6-84 months, and of the cases rated as "Improved," all were of at least 18 months duration. Most of the cases had been originally admitted to the hospital because they were considered appropriate candidates for insulin therapy according to the standards of Sakel and others. The probable prognoses of outcome in these cases were made by the psychiatrist-in-charge before the onset of insulin therapy (Table 1). These clinical impressions were based on the duration and kind of onset of the mental illness and on the prepsychotic personality. The rating of outcome of treatment was given at the termination of insulin therapy. These ratings constitute a rough estimate of the changes in the clinical picture at that time. We recognize the fact that observation over a longer period of time is necessary to evaluate the efficacy of treatment so far as true outcome is concerned.

#### CONCLUSIONS

On the basis of these 19 cases of schizophrenia tested before inception of insulin therapy, there seem to be prognostic implications in performance on certain simple psychological tests. The three tests administered are ones which have been found to show characteristic differences between normal subjects and schizophrenic

patients. Those patients whose performances were very poor on these tests tended to show no improvement under insulin therapy. Among those patients whose performances were relatively superior, the number of improvements was larger. Although the present results are based on too small a number of cases to allow wide generalization, they do indicate that careful psychological testing before and after insulin is scientifically valuable and may contribute information of prognostic significance. While these 19 cases constitute a selected sample, the consistency of the relationships suggests that something more than mere chance is probably operating. The results of this preliminary report are being followed up by investigation of a larger number of cases.

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## THE USE OF INTRAVENOUS SODIUM AMYTAL IN PSYCHOGENIC AMNESIC STATES\*

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Psychogenic amnesic states occur rather frequently in an active psychiatric service. In a short period of time, about four years, Abeles and Schilder<sup>1</sup> were able to collect 63 cases at Bellevue Hospital. Many studies have been made concerning the etiology and psychogenesis of this condition.<sup>2</sup> It is not our purpose to discuss these factors. But it is a propos to indicate the conclusions of Abeles and Schilder in their study: "On the whole, amnesia is a weak attempt of a weak personality to escape conflicts which are chiefly conflicts of actual life, but of course these conflicts have relation to the more infantile reaction types, especially to the Oedipus complex. It is the fear of being punished by the family, by the father and mother or their representatives, which leads to an escape which does not harm the person too much."

Such amnesic states are trying to the family, patient and physician. The family is distraught with anxiety concerning the missing member and the patient is often anxious and depressed because of his condition; the physician spends a great deal of time and effort in an attempt to effect a restoration of memory for personal identity.

Many methods have been used. The simplest is persistent questioning and shrewd guesswork. Other methods have been hypnosis, automatic writing and association with dream material. However, these methods are far from satisfactory. In the 63 cases reported from Bellevue Hospital<sup>1</sup> only 27, or less than half, recovered in 24 hours, 21 in one to five days, 7 in a week, 2 in two weeks, 2 in three weeks or more. Hypnosis is a useful method but is by no means effective in a large percentage of cases. In the above series hypnosis was attempted in 25 but only in eight were the efforts wholly successful, while in but six was even partial success achieved. For four cases the duration was unrecorded.

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However, there is a method which can produce a restoration to the normal state and so gain the identity of the amnesic patient within a few minutes. This is the administration of intravenous sodium amytal, which is often successful even when hypnosis fails.

Sodium amytal is a very useful drug in psychiatry. Its effect in the production of lucid intervals in catatonia has been known for several years.<sup>3</sup> It has also been tried in other schizophrenic reactions, in manic-depressive psychosis and in general paresis.<sup>4</sup> Fundamentally the changes observed in such patients to whom sodium amytal has administered intravenously were largely in the nature of psychic release. New material is often uncovered, mute patients begin to talk, uncooperative, untidy, negativistic patients become more cooperative; they eat and care for themselves while under the influence of the drug. Catatonic and negativistic states can be regarded as representing a state of widespread inhibition. Sodium amytal seems to act in an anti-inhibitory fashion. A typical way in which a catatonic schizophrenic responds to sodium amytal given intravenously is shown by the following case:

Case 1. E. E., female, age 15 years, was admitted in a classical catatonic state. She had marked negativism against movement, was cataleptic and could not be induced to eat, talk or move. No productions were obtained from the patient. After a few days seven grains of sodium amytal were injected intravenously. Within a few minutes the patient responded to questioning, lost her negativism, and cooperated for her feedings. She related numerous delusions of persecution and delusions that she was under the influence of electricity. However, in an hour she began to relapse into her former catatonic state.

Lindemann<sup>5</sup> has studied the psychologic effect induced by administration of small doses of sodium amytal to a group of students. His observations showed a striking change in the emotional attitude of his subjects. All stated that they experienced a feeling of well-being and serenity, and a feeling of warmth and friendship. They felt a desire to communicate and a willingness to speak about personal problems usually not spoken of to strangers. In psychotic patients too he noted a similar change in emotional reaction. Resistant, seclusive and suspicious patients communicated more freely



and became emotionally warm and friendly under the influence of this drug.

Because of this psychologic effect of the drug it was felt that cases of hysterical amnesia would react in ideal fashion to intravenous sodium amytal. The personal memory of six patients with whom this method has been tried was restored within a few minutes. In each case other methods, including hypnosis, had been utilized without success.

The following two case reports are typical.

Case 2. A. W., female, age 21, was brought to the hospital by a police officer who found her wandering in the street unable to give any information about herself. She was admitted at night. When she was seen the next morning her condition was unchanged. Her amnesia was so deep that she was almost in a stupor. She sat in a chair in a huddled fashion with a bewildered expression on her face. She did not respond to questions except to repeat the last word. No relevant information could be obtained. Hypnosis was attempted but was not very successful. The patient was under hypnotic influence to a mild degree but produced no material. Then seven grains of sodium amytal was given intravenously. Almost immediately there was a change in the appearance of the patient. She smiled and began to joke with the examiner. Gradually she reconstructed events leading to her coming to the hospital. She gave her name and other necessary personal information. Then the patient went to sleep for a short while. When she awoke she was fully recovered from her amnesia. The psychogenic stimulus for the amnesia in this case was guilt feelings for an avowed Lesbianism.

Case 3. J. L., female, age 19, was brought to the hospital by a police officer who found her wandering in the street. She spoke freely but could not give her name nor any other personal information. Hypnosis was attempted and with hypnosis the patient reached the cataleptic stage. Nevertheless, no relevant material could be elicited. Later seven grains of sodium amytal were given intravenously. Very soon the patient gave her name and much personal material. She related things that she later told us she was sorry she did, but stated that she was unable to prevent herself

from telling them. After a short sleep she remained fully recovered from amnesia. The psychogenesis in this case was fear of criticism from her family because of inability to solve her economic problems.

Of course the psychiatric problem does not end with recovery from the amnesia. Afterwards the physician should try to help the patient in determining and adjusting his emotional conflicts and personality problems. Accordingly, it must not be expected that success will follow the use of this procedure in all cases. There was complete failure to produce recovery of personal identity in three cases: One was a true hysterical amnesia from which the patient recovered spontaneously the next day; the second case was considered to be one of psychopathic malingering. The third case was a schizophrenic patient who was admitted in apparent amnesia. However, the method is another addition to the therapeutic armamentarium.

#### COMMENT

Many theories have been evoked to explain the action of sodium amytal in producing its psychologic effect. One deals with the beneficial effect of the unconscious state as a "biologic reaction of defense."<sup>6</sup> Another theory deals with the biophysical aspects of colloid dispersion and agglomeration, which are changed by sodium amytal.<sup>7</sup> The most likely theory is the physiological explanation that sodium amytal is a cortical depressant and tends to diminish the normal inhibitory action of the cortical cells. Thorner<sup>4</sup> has found that in nine patients in whom an intravenous injection of sodium amytal was halted just short of unconsciousness he was able to elicit Babinski responses to plantar stimulation.<sup>6</sup> In addition sodium amytal has an action on the autonomic centers in the brain stem.<sup>8</sup> With the removal of inhibition and the effect on the autonomic centers there is produced an easy path for the translation of emotional reactions and patterns into speech and action.

#### SUMMARY

Intravenous sodium amytal is of value in the treatment of psychogenic amnesic states. It is often effective where simple hypno-

sis fails. The physiological mechanism by which sodium amytal produces its psychological effects is indicated.

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## TESTOSTERONE IN MALE INVOLUTIONAL MELANCHOLIA

### *Preliminary Report\**

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The very term involutional melancholia more or less presumes an endocrinological basis for this psychosis and for years the condition has been treated with various endocrine products. However, with the recent impetus given to endocrinology through the discovery of various sex hormones in pure crystalline form as well as their synthetic production, their use in psychiatry has assumed a new importance. Thus, following the discovery of the pure estrogenic hormone by Doisy, Veler and Thayer (1929)<sup>1</sup> there followed a number of reports regarding the use of theelin in involutional melancholia in both male and female cases. The first paper on this subject appeared in 1934 by Werner, Johns, Hoctor, Ault, Kohler, and Weis<sup>2</sup> who reported improvement in all of nine cases treated by this method, and in another group of 11 patients there was an improvement in nine, which amounts to a 90 per cent improvement in the total number of cases treated. It was their opinion that theelin was specific in the depressions occurring in the involutional period. In another report by Werner, Kohler, Ault and Hoctor<sup>3</sup> in a group of 21 cases of involutional melancholia treated with theelin, 19 improved. Later, using larger doses, Ault, Hoctor and Werner<sup>4</sup> treated 14 cases with a recovery rate of 92 per cent. These authors also reported that other mental conditions occurring during the climacteric, aside from the melancholias, were benefited by this treatment. Schube, McManamy, Trapp and Houser<sup>5</sup>, however, criticized the work of these authors both as to their selection of cases and interpretation of results. They treated 10 cases of involutional melancholia (six women and four men) for a period of 10 weeks and of these, seven remained unchanged and three became more psychotic. Of 20 control cases receiving the usual treatment afforded such patients, four recovered. They therefore concluded that theelin was of no value in the treatment of involu-

\*The testosterone-propionate (Breton) used in this study was generously supplied by the Schering Corp., Bloomfield, N. J.

tional melancholia. Carlson<sup>6</sup> of the Menninger Clinic studied the theelin output in the urine of 10 cases of involutional melancholia and found that it was no different from that in normal women at the menopausal age, which would lead one to suspect that the psychosis must be dependent on factors other than an endocrine disturbance.

Although theelin has been employed in both male and female involutional cases, it is difficult to understand the rationale for its use in the former except that up to recent years the specific gonadal hormone of the male was unobtainable. The first successful preparation of the male factor was reported by McGee (1927)<sup>7</sup> from bull testes. This was followed by the isolation by Funk and Harrow (1929)<sup>8</sup> of crude extracts from male human urine which produced growth of the capon comb. They called it "The Male Hormone." Butenandt (1931)<sup>9</sup> obtained a pure crystalline substance from human male urine which stimulates capon comb growth and also produces physiological effects on male reproductive organs. This substance, which he named androsterone, has a definite melting point of 178° C. It was later prepared synthetically from cholesterol by Ruzicka, Goldberg, Meyer, Brungger and Eichenberger (1934)<sup>10</sup>. Later experiments revealed that the substance obtained from the testes and that from male urine differed widely in their physiological effects.<sup>11, 12, 13</sup> David, Dingemans, Freud and Laqueur (1935)<sup>14</sup> isolated from testes a pure crystalline substance with a melting point of 154° C. which was much more active than androsterone and which they named testosterone. This substance was also subsequently prepared synthetically from cholesterol by Ruzicka and Wettstein (1935)<sup>15</sup>.

Since the isolation of a pure male hormone, numerous studies have been conducted to determine its effect upon man and animals. Hamilton<sup>16</sup> found that this substance had power to produce penile erections, relieve migraine and cure the acne and hot flushes occurring in hypogonadal conditions in the male, as well as having an effect in lowering the pitch of the voice. He also found that the treated subject became more energetic, virile and self-assured. In a later article<sup>17</sup> the same author reported the ability of this substance to produce growth in and maintain the function of the male



reproductive tract, including its erectile ability, as manifested by the occurrence of erections in castrated animals as well as in immature children.

The following study was undertaken to determine whether such a definitely potent substance as testosterone would be beneficial in producing amelioration in the mental symptoms of male cases of involutional melancholia. Such a result would be consistent with the view that the mental symptoms of this condition are entirely or chiefly dependent on a gonadal hormone deficiency occurring during the involutional period. Five cases with fairly typical involutional agitated depressions were chosen for study. The number is of course too small to permit any but tentative deductions. Male involutional cases, especially those displaying the typical criteria generally acceptable for this classification, are not very numerous in mental hospitals. Many so diagnosed, on careful analysis, are found to fit better in the manic-depressive, dementia præcox, or cerebral arteriosclerotic groups.

Testosterone-propionate in sesame oil was administered intramuscularly three times weekly in 10-milligram doses for a period of three to four months. This seems a reasonable trial period considering the fact that its effects on secondary sex functions have been reported observable within a period of two weeks to a month.

#### PROTOCOLS

Case 1: Male, white, aged 54, admitted to Kings Park State Hospital on August 11, 1934, with a history of a psychosis of rather acute onset occurring about six weeks before admission when he attempted suicide by swallowing iodine. Up to that time the patient had shown no previous signs of a mental condition. Following the suicidal attempt, he became depressed over the sins he had committed and the harm he had done to his family; expressed numerous somatic ideas; said his stomach was stuffed up and his bowels could not move.

This man began to show the effects of sexual stimulation following a treatment period of three weeks. Although he had been impotent for a number of years, he developed erections and nocturnal emissions, became somewhat more talkative and active but

generally there was no change in his mental content and he continues at the present time to express a great many delusions of a somatic and paranoid character.

Case 2: Male, white, age 60, admitted to Kings Park State Hospital on October 7, 1933, with a history of a psychosis of 10 months duration. Up to the time of onset he had been congenial and good natured but he became morose, depressed and seclusive; expressed fear for his family, did not want to leave the house, and complained of people looking at him. He showed no improvement after a one month stay at home and was admitted to a State institution.

Three months of treatment with testosterone failed to produce any change in this man's mental condition, nor was there evidence of any marked sexual stimulation. He had occasional erections prior to the treatment and these have not been increased in number.

Case 3: Male, white, age 63, admitted to Kings Park State Hospital on October 28, 1933, with a history of an agitated depression, gradual in onset, and an attempt at suicide. There were also ideas of reference and auditory hallucinations.

There has been no noticeable change in this man's mental condition following three months treatment. Physiologically there was no marked stimulation. He had been impotent for many years. There have been no erections since the institution of treatment.

Case 4: Male, white, age about 55, admitted to Kings Park State Hospital on November 2, 1933, with a history of an agitated depression of several months duration. He expressed ideas of guilt; said he had committed the unpardonable sin, that his brain was rotten, that his stomach was rotting away, and that his food did not digest properly.

There has been no noticeable change in this patient's mental condition. He had had no erections for about a year prior to treatment, nor has there been any stimulation of the sexual function following treatment.

Case 5: Male, white, age 54, admitted to Kings Park State Hospital on October 10, 1933, with a history of having shown anxiety

for several months. He had become very much concerned over his physical condition; developed the idea that he had contracted syphilis from sitting on a couch; complained of his genitals, of his rectum; became very agitated, suicidal and depressed.

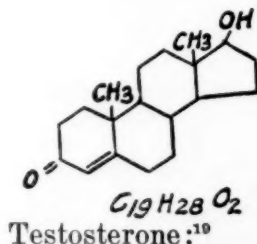
There has been no noticeable change in this man's mental condition, nor was there any sexual stimulation resulting from the injections. He had no erections for six months prior to the treatment nor have there been any subsequently.

### RESULTS

It can be stated quite definitely that testosterone-propionate had little or no effect on the mental condition of the five cases treated. The psychological factor involved in the treatment may be disregarded as the patients were not aware of the nature of the injections, nor were they informed of the results to be expected. In Case 1 there was evidence of sexual stimulation consisting of erections and ejaculations following an impotence of several years duration. He also became more alert and talkative. However, with his greater accessibility there was an apparent aggravation of the psychosis, shown by the fact that he divulged a number of delusions which previously had not been elicited. He also developed some new delusions resulting from his stimulated sexual activity, believing that a woman came to his bed every night and had intercourse with him. The other cases showed no noticeable change either physiologically or psychologically.

### DISCUSSION

It is interesting to observe the similarity of the structural formulae of theelin and testosterone:



This similarity may perhaps make plausible the interchangeable employment of these hormones in either sex, in cases showing a definite deficiency syndrome. However, it cannot be definitely asserted that involutional melancholia represents such a syndrome. On the other hand, it has been maintained by various investigators<sup>5, 20, 21</sup> that the condition is not entirely dependent on involutional changes but rather on a previous personality pattern which undoubtedly develops into the typical psychosis as an end result. The future melancholic is overserious, lacks a sense of humor, adopts a rigid moral and ethical code from which he does not sway, is profoundly stubborn, overmeticulous, overconscientious, and shows an almost pathological tendency for saving. He is, in other words, the type of personality usually referred to as analerotic.<sup>5</sup> From this viewpoint, the psychosis is not an entity based on a glandular deficiency but is the resultant of a lifelong personality defect and not, therefore, likely to improve with endocrine therapy. It is probable that sexual stimulation can be obtained by giving large doses to such patients. Nevertheless it is difficult to see what benefits would accrue from increasing the sexual function of a man in the involutional period unless it were to improve his mental condition as well.

#### SUMMARY

1. Five cases of male involutional melancholia were treated for a period of three to four months with testosterone-propionate with no noticeable improvement in their mental condition.
2. Of these five, four failed to show even the expected physiological stimulation of the sexual function although one showed some effect in that direction.
3. It is believed that testosterone is of no value in the treatment of male involutional melancholia.

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## URONIC ACIDS IN SCHIZOPHRENIA AND EPILEPSY\*

### *A Preliminary Report*

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Interest in the biochemistry of individuals suffering from schizophrenia is developing rapidly and is being accelerated by the use of insulin and metrazol in the treatment of this disorder. Under insulin and metrazol therapy, it is evident that not all patients respond favorably and it is obviously important to know the reason for both the favorable and unfavorable responses. These forms of treatment are valuable, however, from a research standpoint, in that they allow a comparison of functions, before, during and after treatment.

The author noticed when he first came in contact with schizophrenic patients, the so-called "mental hospital odor." Some years later, upon entering the room where insulin treatment was being administered, the same odor was noticed, but greatly intensified. Since this odor is definitely not that of feces, urine or bromidrosis, and occurred on a ward where no food was served, the conjecture arose that insulin hypoglycemia might function as an eliminator of toxic metabolic products.

Search of the literature revealed that uronic (principally glycuronic and galacturonic) acids have been known as detoxicating factors for some time<sup>1,2</sup>; that their production is dependent upon carbohydrate stored in the liver<sup>3</sup>; and that their production is increased by the administration of camphor, menthol, borneol and other toxic compounds<sup>4</sup>. Since insulin is known to increase the storage of carbohydrate in the liver, it seems obvious therefore that insulin should increase the production of uronic acids.

A troublesome factor in administering the hypoglycemic shock therapy has been the large amount of thick, tenacious saliva secreted, which sometimes interferes with respiration, and, if aspirated, may cause serious difficulties. According to Hawk and Bergeim, mucin is the substance which gives to saliva its viscosity and

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is, itself, a conjugated glycoprotein (uronic acid plus glucosamine plus protein molecule)<sup>5</sup>. Manville<sup>6</sup> states, "A prosthetic portion of the mucin molecule is glycuronic acid." It should be apparent that, since the viscosity and volume of saliva is increased by insulin hypoglycemia, the production of uronic acids must also be increased.

A qualitative Tollens test<sup>7</sup> was done on saliva, urine, and protein-free blood filtrate and all gave positive reactions for uronic acids. Hydrolysis of the mucin in saliva was necessary before a positive Tollens could be observed. The quantitative determination of uronic acids in urine has met with technical difficulties and this work is still in the experimental stage.

*Patient A*

<i>Blood drawn:</i>		<i>Mgm. uronic acids per 100 c.c. blood:</i>	
7:00 A. M.	{ Before insulin injection and after rest day	32.5	{ Average 31.8
		33.5	
		29.0	
11:00 A. M. (approx.)	{ Same day at height of insulin reaction	55.5	{ Average 52.1
		60.0	
		41.0	
3:00 P. M.	{ Same day 8 hours after insulin injection and 3 plus hours after termin- tion	34.5	{ Average 40.4
		43.5	
		44.0	

*Patient B*

<i>Blood drawn:</i>		<i>Mgm. uronic acids per 100 c.c. blood:</i>	
7:00 A. M.	{ Before insulin injection and after rest day	34	{ Average (of two) 39
		44	
		—	
11:00 A. M. (approx.)	{ Same day at height of insulin reaction	49	{ Average 52
		39	
		67	
3:00 P. M.	{ Same day 8 hours after insulin injection and 3 plus hours after ter- mination	21	{ Average 26.3
		21	
		37	

Quantitative determinations of uronic acids in protein-free filtrate of blood gave the following suggestive results on patients who were improving under insulin therapy. Three tests were run simultaneously to provide a check of procedure. The method used was that of Quick<sup>8</sup>, with some slight modifications.

In patients treated with metrazol, a decrease of uronic acids in the blood was found immediately after the convulsion, and further studies seem to indicate that the rise in uronic acids appears on the day following injection of metrazol.

Since patients are usually much more confused on the day of metrazol injection, and their improvement, when it takes place, does not occur until the day following injection, this clinical course and the suggested laboratory findings seem to be consistent.

Since the time of Kraepelin, and probably before that time, many have believed schizophrenia to be of toxic origin. The fact that its symptomatology resembles that of the known toxic psychoses in many respects, and the fact that schizophrenia has not been proved to be degenerative, neoplastic, infectious, or allergic, tends to lend weight to the conception of its toxic origin.

This concept of the origin of schizophrenia may also indicate the solution to some of the problems associated with epilepsy. The preconvulsive irritability, confusion, and sluggishness of the epileptic may be the result of a toxic process associated with faulty uronic acid metabolism. The convulsive seizures in epilepsy may be an attempt by the body to overcome this toxic condition. At any rate, it has been noted by all who come in contact with psychotic epileptic patients that, shortly after a convulsion, their mental condition usually shows improvement. This improvement is shortlived and is followed by increasing psychotic conduct until the next convulsion. Here again, the increase of saliva, associated with an epileptic convulsion, would seem to indicate that uronic acid metabolism plays an important part.

A search of the literature has failed to reveal any attempt to correlate uronic acid metabolism with schizophrenia or with the psychoses associated with epilepsy.

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## CONTROL OF TUBERCULOSIS IN THE HUDSON RIVER STATE HOSPITAL

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In the July, 1937, issue of the *PSYCHIATRIC QUARTERLY* there appeared a very interesting paper by Dr. Louis Carp,<sup>1</sup> a member of the Board of Visitors of Rockland State Hospital, entitled "The Tuberculosis Problem in New York State Hospitals." This article was of particular interest to me as I have been closely associated with this work at the Hudson River State Hospital. Dr. Carp's observation that the State hospitals fail to handle tuberculous patients properly has caused considerable comment. Therefore, partly because we are on the defensive and partly because we would like to stimulate further interest and constructive criticism in regard to this problem, I shall present the plan which has been in force for the past two and one-half years in the Hudson River State Hospital and which has proven entirely satisfactory.

First I shall describe the buildings, equipment and regular routine of the tubercular units. There are two separate buildings, Hill Crest with 100 beds for male patients, and Lake View with 112 beds for female patients. There are also two cottages for arrested cases, each providing approximately 55 beds. The buildings are up-to-date and have proper sanitary facilities, trained personnel, and isolation rooms for almost all of the very sick patients. They have, in short, all necessary equipment—screens, incinerator, bed-pan sterilizers, ventilation, etc.—for making them "near" perfect for tuberculous patients. For Hill Crest we procured a fluoroscopic unit which can also be used for radiographic work, an up-to-date, well-equipped dark room, shadow boxes, protective aprons and gloves for the personnel, pneumothorax apparatus, ultra-violet ray lamp, bronchoscope and Coryllos thoracoscope. In Lake View we have a portable X-ray unit with which all chest films are taken on patients examined at bedside. It may also be of interest to know that this building was constructed by hospital employees under the supervision of the master mechanic. Although it is not as up-to-

\*Read before the Dutchess County Psychiatric Society, March 18, 1938. The author appreciates the cooperation of Dr. Ralph P. Folsom, superintendent of the Hudson River State Hospital, in this project.



date as Hill Crest, it will compare favorably with many buildings of county sanatoria.

At the beginning of our work, all patients in these buildings were reexamined and reclassified according to the National Tuberculosis Association's requirements. Of the 95 patients in Hill Crest, 35 were active, 28 were quiescent or apparently arrested, 32 were negative. Of the 105 patients in Lake View, 37 were active, 22 were quiescent or apparently arrested, and 45 negative.

During these examinations 11 patients were selected for artificial pneumothorax, and this treatment was given at the proper intervals. Negative cases in both buildings were gradually sent to other services; quiescent and apparently arrested cases were placed on the upper floors or transferred to cottages and constituted the ambulatory group; active cases were kept downstairs and segregated in different rooms and wards according to the severity of their condition. These are kept under close observation.

A routine was established according to the schedule of other tuberculosis sanatoria with strict enforcement of rest period, proper nursing care—especially in obtaining clinical data such as temperature, pulse, respiration, weight, amount of expectoration, severity of cough, hemorrhage, etc. Apparently-arrested cases were encouraged to participate in occupational therapy activities and were allowed to have gradual and supervised exercise out of doors. The rest period in the afternoon was enforced throughout the buildings.

The regular hospital meals have been changed to comply with the special requirements of tuberculosis patients and, besides the three regular meals, extra nourishment is given twice daily, oftener if needed. This extra nourishment consists of eggnogs, cocoa, milk, crackers, orange juice, or anything specified according to the patient's needs. From October until the warm weather cod liver oil and tomato juice were given to active patients and to all those suspected of gastrointestinal involvement. Ultra-violet ray lamp treatments given to patients with gastrointestinal tuberculosis number 725 up to the present time; 640 pneumothorax refills have been given to 23 selected cases.

During examinations, ear, nose and throat were also examined, and cardiac records were noted. The patients who needed attention for nose and throat diseases were referred to the consultant in that field. All nurses, attendants, and kitchen help were examined, and X-rays were taken at the inauguration of this service and checked every six months if they were in good health; otherwise they were reexamined and X-rays were taken as required. During these years, 63 periodic examinations were done on employees, 7 of whom were sent to Ray Brook Sanitarium for treatment, 6 were found arrested and 11 kept under observation. Three out of this number are still having periodic rechecks. Every student nurse who complains or shows signs of respiratory disorder is also examined.

During this two and one-half-year period, 704 X-rays were taken and practically all cases were examined by fluoroscope. The sputum was collected and sent to the laboratory in all cases where it could be obtained, and attempts were made to collect sputum from uncooperative patients by throat swabs and other methods. There were 149 negative sputa from female patients, 38 positive; 304 negative male, 32 positive. Every two or three months all patients are rechecked, and X-rays are taken so that their progress may be noted. Of course, patients under pneumothorax treatment are fluoroscoped before and after each treatment, and X-rays are taken as often as indicated.

Naturally, the mental condition of the patient has much to do with treatment and progress. Many good pneumothorax cases have had to be discontinued due to lack of cooperation from the patient. We have on record a few cases where improvement of the pulmonic condition greatly aggravated the mental condition. We have noticed also that newly-admitted patients who have just developed tuberculosis or those who have recently been admitted to the hospital with some tuberculosis give much better prognosis than those with chronic mental disease. In what are known as the disturbed and deteriorated services, where the problem should be watched with greatest care, we have noticed this particularly. Judging from my experience in the Hudson River State Hospital I have come to the conclusion that tuberculous patients in State hos-

pitals die not because of the lack of treatment or equipment, but because their tuberculosis is aggravated by their behavior arising from their mental makeup, especially in schizophrenics.

We have also encountered a great deal of difficulty in obtaining permission from the relatives of patients for surgical procedures. In a few cases, ideally suited for pneumolysis, we were not allowed to go ahead with our plans with the result that pneumothorax, which we had been giving with promising results, became a failure. Nevertheless, we are proceeding with the idea that surgery for tuberculosis is the most modern and up-to-date measure,<sup>2, 3, 4, 5</sup> and we are in the process of organizing a department of thoracic surgery. To our great pleasure we have not only secured the cooperation of leading local surgeons, but also the promise of an internationally known thoracic surgeon to visit us once a month and help with our problems.

To facilitate new case findings and to help physicians in their chest diagnoses a tuberculosis clinic was organized. At the present time the tuberculosis clinic at Hill Crest takes care of all patients suffering from intrapulmonary diseases, and all services of the hospital are requested to send such patients for diagnosis, recommendations and treatment. On page 758 will be found the blank which the attending physician fills in and sends with the patient.

There were a few cases of bronchiectasis which were properly diagnosed after Lipiodol injections. Cases of tuberculous pneumonia, unresolved pneumonia, lung abscess, and carcinoma of the lung were also found. The patients with a definite diagnosis of tuberculosis were placed in their respective buildings, and a few patients were kept in this service for observation and further diagnosis. During this period all necessary data were obtained; sedimentation tests were made, and guinea pig inoculations were made in cases of pleurisy with effusion or persistently negative sputum, in suspected cases.

To illustrate the amount of work done in the clinic, let us quote from the census up to March 1, 1938, when 361 patients had been referred from other services. Of these, 117 were found to be either active or quiescent; 52 were transferred to Hill Crest and 65 to Lake View. All physicians in the different services are urged to

send every case that might be suspected of tuberculosis, and they have been responsive and cooperative. If the patient was too sick to be sent to the clinic, the clinic physician examined him at the bedside. Every new patient whose history might be suspicious of tuberculosis was also sent to the clinic for checkup.

HUDSON RIVER STATE HOSPITAL  
REQUISITION FOR TUBERCULOSIS CLINIC EXAMINATION

Hospital No.                      Ward:  
Name:  
Date of Admission:  
Age:                              Sex:  
Date of Requisition:

Complete Mental Diagnosis:

Physical History. Please check below:

Syphilis	Hypertension	Emphysema
Arteriosclerosis	Thyroid	Aneurism
Rheumatism	Cardiac Valvular Disease	Diabetes
Nephritis	Myocarditis	

Laboratory Data:	Blood Wassermann	
	Urinary Analysis	Was sputum examined?
	Has X-ray of chest been taken, if so, what were the findings, and give number of Xray:	Positive or negative for Tb.

**SYMPTOMS:**

Cough	Expectoration	Night sweats	Streaked sputum
Fatigue	Chest pain	Loss of weight	Shortness of breath
Poor appetite	Poor digestion	Fever	Blood pressure

Lung Examination by Ward Physician:

Reason for Reference to Tb. Clinic:

Referring physician:

The following figures show a very startling contrast: Bowne Hospital admitted about 136 adult patients from Dutchess County, including Poughkeepsie, during the two and one-half-years period, while in this institution, the Hudson River State Hospital, we discovered 117 tuberculous cases during the same period. If you take into consideration the vast difference\* in the population from which the respective cases were drawn, it is obvious that the incidence of tuberculosis in the State hospital is very high in comparison with that of the general population of the county. Such a difference might well be explained by the persistent effort made by the resident staff to discover cases and also by the fact that the State hospital population is so constituted that we might well expect a greater number of cases than for the population at large. It is also quite evident that many tuberculous persons in the county are not hospitalized, and some of them are at the present time in State or private sanatoria, and, of course, are not included in this figure. Nevertheless, these figures are significant.

Incidentally, since I am particularly interested in cardiology, this clinic has been doing some work in connection with the early signs of aortitis in syphilis. We also made thorough physical examinations, which included X-rays and electrocardiograms, of 166 patients who were selected for insulin treatment in dementia præcox. Curiously enough, three out of this group, after insulin shock, developed pulmonary tuberculosis, although they were absolutely negative prior to this treatment. We have no explanation for this occurrence.

The tuberculosis work having become more and more involved, it would seem not only desirable but expedient to have a laboratory technician who could do all the necessary work in a small laboratory in the tuberculosis unit without transferring all specimens to a central laboratory. At the present time sedimentation tests are done by nurses, but only in few instances due to the lack of time. It is highly important, however, that this test be made in all cases. Samples of blood for this test cannot be transferred to the central laboratory, as exposure to difference of temperature, and unavoidable shaking, would nullify the correct reading. The technician in

\*The population of Dutchess County is approximately 110,000; that of Hudson River State Hospital, approximately 5,550.



the tuberculosis unit could also, with the cooperation of nurses, watch the uncooperative patients and obtain sputa during the intervals when they are less mentally disturbed. In persistently negative sputum the technician could also obtain specimens through gastric lavage. Gullbring and Levin,<sup>6</sup> proved the importance of gastric lavage for demonstration of tubercle bacilli in adults. Compare these figures: Bowne Memorial Hospital, with an average adult population of 79 during the past year, examined more than 400 sputum specimens, while at the State hospital with 215 patients over a period of two and one-half years, only 523 sputum examinations were made. Such a laboratory could be established very easily and the expense would be negligible. Of course, it would be under the general supervision and guidance of the hospital pathologists. I am sure that such a laboratory will be very useful and eventually prove its own necessity, as much as our X-ray unit has already done.

All this work, however, is but a minor part of a greater plan. Since the initial work in the tuberculosis unit has been accomplished and clinic routine established, our attention has been directed to the tuberculosis problem in relation to the whole hospital, employees as well as patients. State institutions, according to Burns,<sup>7</sup> "may become reservoirs of infection unless definite control measures are taken." He emphasized his opinion that the tuberculin test on all individuals is the best method for case finding. We have a definite plan for examining all patients and employees in the hospital by Vollmer's patch method and Mantoux, which is now being carried out. The P. P. D. has proven the best for many workers.<sup>8, 9, 10</sup> Nelson,<sup>11</sup> states "P. P. D. is the choice," and Jacobs,<sup>12</sup> says also that the "intradermal test is the most valuable diagnostic measure." I shall say just a few words about fluoroscopy in case finding. It is a well-known fact that fluoroscopy in competent hands is a very convenient and practical method for detecting pulmonary tuberculosis.<sup>13, 14, 15, 16</sup> It should also be borne in mind, however, that a little over 5 per cent of pulmonary tuberculosis will be overlooked by this method.<sup>17</sup> We are concerned not alone with pulmonary tuberculosis, as the source of tubercle bacilli can be in any other organ of the body. For this reason it is im-

portant that the tuberculin test be employed. Our intention is to equip the admission building with a fluoroscope, where all new patients, who usually stay in this building for at least four weeks, can be studied carefully, first by fluoroscopy and then by other methods. All this work requires a specially-trained personnel.

Since this paper was read, an investigation of possible tuberculosis among the nontuberculous group was carried out in 200 cases, which were taken at random from different services. They were examined, fluoroscoped, X-rayed, and two types of tuberculin tests were applied—Vollmer and P. P. D. by Mantoux. Results of this survey are shown in the following figures:

X-ray, fluoroscopy, and physical examination:

169 Patients—Negative by X-ray	
Negative by fluoroscope	
Negative by physical examination	
8 Patients—Suspected by X-ray	
Negative by fluoroscope	
Negative by physical examination	
5 Patients—Positive by X-ray	
Negative by fluoroscope	
Positive by physical examination	
12 Patients—Positive by X-ray	
Positive by fluoroscope	
Positive by physical examination	
2 Patients—Positive by X-ray	
Positive by fluoroscope	
Positive by physical examination	
4 Patients—Suspected by X-ray	
Suspected by fluoroscope	
Negative by physical examination	

Tuberculin test:

Both positive .....	185
(24 of these were negative by the first Mantoux test)*	
Both negative .....	2
Mantoux positive, Vollmer negative .....	2
Test only by Vollmer .....	8
Both tests refused .....	2
Refused second test .....	1
	<hr/>
	200

\*The first Mantoux test was carried out with 0.00002 mg. of P. P. D.; a second with 0.005 mg. of P. P. D. was performed if the first resulted negatively.

The recently perfected Vollmer patch test offers the important advantages of simplicity, time-saving and economy in large scale use and seemed especially to be a method which would not tend to excite nor antagonize the feeble-minded and insane. We have felt that there is still room for further examination of the relative accuracy of the patch test, compared with the standard Mantoux test as carried out with the preparation P. P. D. Nevertheless, in our series the Vollmer patch test was equal to the Mantoux.

Several very interesting points may be brought out from a study of these figures. Out of 7 positive by X-ray, only 2 were recognized by fluoroscopy, and all 7 by physical examination. Four patients were suspected by X-ray and fluoroscopy, but were negative by physical examination. Eight patients were suspected by X-ray, but were negative by fluoroscopy and by physical examination. This shows that examination by fluoroscopy for mental patients is not as reliable as for the nonpsychotic. This discrepancy might be well explained by the fact that the psychotic, in majority, were uncooperative and fluoroscopy could not be carried out satisfactorily.

This series shows also that thorough physical examination of the chest is of as much value as X-ray.\*

So far as the tuberculin test is concerned, the number of reactors is so great that it supports the consensus of opinion that it is of little value in adults.

The most outstanding result of the investigation was the discovery that 3½ per cent of tuberculous patients were unrecognized by routine examination on admission or during reexamination at later dates.

We are planning to continue this investigation further and hope to be able to give a more complete report in the future.

Every city and county tuberculosis institution should have at least 1 physician to 50 patients, and I think the same ratio should apply to tuberculosis work in State institutions. In the Hudson River State Hospital, for example, the physician who attends tuberculous patients has psychiatric work not only among these patients but also among many others—about 350—scattered throughout other buildings, and has, in addition to his psychiatric and medical duties, a tremendous amount of clerical work. Mental hygiene

\*It was necessary to make physical examination of this group of 12 more than once.

clinics, hospital conferences, and interviews with patients' relatives and friends also consume a great deal of his time. The number of tuberculous patients alone under his care, 215, actually requires the services of two or three physicians.

Communities of the size of a State hospital usually have a tuberculosis clinic for detecting new cases. This is another very important reason why State hospitals should have a sufficient number of physicians specially trained in this field. Examinations should be made not only of all incoming patients suspected to be tuberculous, so that they will not become a menace to fellow-patients and personnel, but also of patients about to be paroled or discharged, for it would be a serious medical error to allow a patient to leave the institution with unrecognized tuberculosis. Therefore, the work of the phthisiologist in the State institution includes not only routine work in the tuberculosis units but examination of incoming and outgoing patients, and case finding throughout the entire hospital by means of the Mantoux or other tests. It is essential, however, that the Mantoux test be made only by trained physicians for "correct evaluation of positive and negative tests is important." Dodds,<sup>18</sup> and numerous other workers<sup>9, 19</sup> sustain this opinion.

We admit that the present setup is far from being ideal. Very little time is left for real medical work and scientific observation. For instance, it would be interesting to know why certain diagnostic groups of State hospital patients develop tuberculosis much more readily than others, although they live under similar conditions.

No doubt there are many tuberculous patients still unrecognized. If we cite Carp's figures,<sup>1</sup> showing there are 2 per cent of such patients, then we ought to be prepared, at the end of our investigation, to take care of more than two hundred additional active cases, which will make our tuberculosis census about 450. If we take our own figures of 3½ per cent unrecognized tuberculous patients, the additional active cases in the Hudson River State Hospital will be increased proportionally.

It will be generally agreed that the approach to tuberculosis problems in State hospitals differs greatly from that used in tuber-

culosis sanatoria. Instead of patients who are cooperative and have the will to get well, we have resentful, resistive, and very often malicious types. Therefore, the methods of handling State hospital patients require discrimination. Certainly, the care of tuberculous insane is a new and complicated task and gives "splendid opportunity for research." Toward this end psychiatrist and phthisiologist must work in close cooperation.

Even after our case-finding work has been completed, the real fight against tuberculosis in this institution will have only begun. There must be a complete followup of the work with each patient in the attempt to arrest the disease. The number of suspected or borderline cases should be known and they should be kept under close observation. To carry out a systematic effective program requires adequate personnel.

I do not agree with Carp and others who advocate a central State unit for tuberculous mental patients, for there would undoubtedly be a tendency to send every suspected and arrested case to the unit, with the result that the unit would become overcrowded without accomplishing its purpose. Such a condition prevailed at the inception of this work at the Hudson River State Hospital, where 38 per cent of the inmates of the tuberculosis buildings were found negative for tuberculosis, and clinic work proved that only one-third of the cases referred as tuberculous were found to be positive.

Furthermore, I do not agree with Carp that transferring patients who become psychotic, from county tuberculosis sanatoria to such central units will be practicable, for our experience in Poughkeepsie has led us to the conclusion that the majority of these cases develop very suddenly and necessitate immediate transfer to the nearest State hospital. If State hospitals closed their doors to these patients and insist upon transferring them to units located at a distance it would be a great handicap to the patient and to the tuberculosis sanatoria.

The solution of the problem, it seems to me, is not to establish new expensive and distant units, but to create positions with the proper salary for tuberculosis specialists and permit them to institute proper treatment and modern facilities within existing institutions, if needed. This is our primary need. Tu-



berculous patients in State hospitals certainly should receive attention and advantages at least equal to those available to patients in other communities.

As I said before, the purpose of this discussion is to stimulate interest in the tuberculosis problem and to have opinions from the medical men of other institutions so that we can eventually evolve the most practical plan.

#### CONCLUSIONS

1. It is of great importance that tuberculosis work be done properly in State institutions, not only for the individual hospital but for the community as a whole.

2. Lack of trained physicians, rather than of equipment and treatment, is a primary cause of inadequate care of tuberculosis in State hospitals.

3. Central State units will fail in proper handling of tuberculosis patients while present conditions in State hospitals exist.

(a) Transferring patients from local tuberculosis sanatoria to central State units will be more difficult than transferring to nearby State institutions.

(b) Unless there were segregation and expert observation and examination at the State hospitals, the proposed central State units would probably be overcrowded with arrested or suspected cases.

4. To carry out the tuberculosis work properly the appointment of at least two full-time tuberculosis specialists in each State institution is not only necessary, but most urgent and important.

5. The designation of one or two State hospital tuberculosis units as centers for thoracic surgery probably will be necessary in the future.

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## WATER INTOXICATION IN A MENTAL CASE

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That harmful effects may result from overforcing of fluids has been known for some time but Helwig, Schutz, and Curry<sup>1</sup> claim to have reported the first human case in 1935 in which a fatal water intoxication resulted from the administration of large quantities of tap water by proctoclysis. In connection with their report they experimentally administered tap water into the rectums of rabbits and were able to reproduce in them the same symptoms and pathological picture found in their patient. Helwig, Schutz, and Kuhn<sup>2</sup> subsequently reported a second similar case with recovery. In the latter case, a woman, 64 years of age, following an abdominal operation, received over 7,000 c.c. of water by proctoclysis over a period of about thirty-six hours following which she developed unconsciousness, convulsive movements, cyanosis, Cheyne-Stokes respiration, opisthotonos and a bilateral Babinski sign. Blood chemistry studies in this case showed a diminished blood chloride and the patient responded quite promptly to intravenous administration of sodium chloride. These authors conclude that the symptomatology resulting from excessive tap water absorption can be explained by the disturbance in the water balance as a result of osmotic changes incidental to the dilution of the chlorides in the blood.

Under normal circumstances there is a well regulated balance in the body between the water requirements and the water intake. The sensation of thirst generally serves as a good indicator for the need of more fluids in the body and is normally responded to by an appropriate intake. In mental cases, however, the water balance is frequently disturbed due to the failure of the patient to respond to the usual physiological sensation so that we quite often find cases in which dehydration is a prominent symptom unless they are carefully watched and sufficient fluids administered. A rarer occurrence is for a patient to consume excessive quantities of fluids and in the case herewith reported this resulted in symptoms which could be explained only by a disturbed water balance.

This patient developed a delusion that she was being poisoned and to overcome this she began to drink tremendous amounts of water. It is reliably reported by the charge attendant that during a period of about three days prior to the onset of the physical symptoms the patient must have consumed gallons of water although the exact amount, of course, cannot be determined.

*Case Report:* Mrs. M. H., a white woman, aged 31, married, born in the United States of Irish descent, was admitted to the Kings Park State Hospital, December 8, 1934. There is a strong psychopathic history in her family, her mother having been a patient in a mental hospital for approximately twenty-five years with a diagnosis of dementia præcox, one paternal uncle died in a mental hospital and one brother is a patient in a mental hospital. Her early life was rather uneventful. She completed three years in high school and then went to a business college. Following this she obtained employment as a clerk. She married at the age of 20 and has two children. She became separated from her husband just prior to coming to this hospital. The nature of the marital difficulties is unknown; however, the excessive drinking of the husband may have been a factor. The exact onset of her psychosis is not definitely known. The patient had come to the attention of the Society for the Prevention of Cruelty to Children on a number of occasions and on December 1, 1933, the organization received a complaint that the patient was a mental case and was unable to properly care for her children. She developed ideas that men followed her and attempted to have sex relations with her and for that reason she moved from place to place, never remaining but a short period at any one address. She accused her husband of bringing certain men into her room at night, and of transmitting a venereal disease to her and her children. These activities finally resulted in her commitment. On her admission to the Kings Park State Hospital she was euphoric, laughing and smiling a great deal and relating her delusions at considerable length. She usually was pleasant, affable and cheerful in her manner. She stated that one of her children was illegitimate, the father being a man who was brought into her room by her husband while she was asleep; that this man had been persecuting her ever since. He had

been circulating stories that the patient was a sex degenerate. She was oriented in all fields; gave a complete and detailed account of her past with considerable detail. Insight was totally lacking and her judgment was grossly impaired. Physical examination revealed an undernourished, fairly well developed young woman. There was some question as to the regularity of the pupils, but subsequent as well as present examination fail to reveal any neurological findings. Urine analysis and blood Wassermann negative. Spinal fluid examination negative. Pelvic examination revealed a badly lacerated cervix with extensive erosion. She was diagnosed dementia præcox, paranoid type. She continued to show very little change in her mental or physical status in her subsequent stay in the hospital.

At about 8:30 p. m., August 9, 1935, patient was reported to have a convulsive seizure. Her color was poor, face appeared edematous and her extremities were cold. She responded somewhat to stimulation. Shortly after this she vomited a large quantity of water after which she seemed more comfortable and some of the swelling in her face subsided. During the night she vomited up more water on several occasions. At about 11 p. m., she had another general convulsion during which she frothed at the mouth and bit her lips. Her pulse continued good following this but her rectal temperature was 96° F. She did not void urine during this time. She had three more convulsions, the last one occurring at 3:30 a. m., at which time she was voiding some urine. She also had one bowel movement which was reported as being very watery. At 8 a. m., she had a rectal temperature of 100.4° F., pulse 90, respirations 30. She was in a stuporous condition from which she could not be roused. There was no history of any convulsive attacks prior to the onset of this condition. Blood chemistry studies showed a blood sugar of 100 mgm. per 100 c.c. of blood and 35.3 mgm. non-protein nitrogen per 100 c.c. of blood. Urine examination showed a trace of albumin but was otherwise negative. The spinal fluid was clear and under a pressure of 100 mm. of water. It was negative for globulin, cell count 3. Blood count showed 4,030,000 red cells and 12,000 leucocytes; 85 per cent hemoglobin



and a differential count showed 86 per cent polynuclear neutrophils, 11 per cent lymphocytes, and 3 per cent mononuclear cells. Unfortunately no determination was made of the chloride content of the blood. Her rectal temperature rose to 102.2° for one day but was believed to have been due to the intravenous glucose administration which she received. During the first 24 hours her bed was wet constantly from urine and she had several liquid stools. Throughout her comatose state she showed twitchings which simulated an epileptic convulsion. She was given bromide and choralhydrate through a stomach tube. She began to show improvement but continued to be in a semistuporous state for about five days, when she began to be in somewhat better contact with her surroundings. However, she showed a marked motor aphasia, her verbal productions being only partially intelligible. She gradually improved to an uneventful recovery. Following her recovery her mental condition showed very little change from what it was prior to the onset of the physical condition. She expressed a great many rather bizarre delusions. She admitted having drunk excessive quantities of water but would not reveal the reason for her so doing. No apparently permanent sequelae resulted from the convulsive episode and she has not had a similar episode since.

*Discussion.* It is generally believed that it is difficult to disturb the water balance of the body by either excessive or diminished intakes of fluid. In the case of an abnormally large quantity of water being forced into the tissues the kidneys generally create a balance by increasing the urinary output. However, in occasional cases it appears that the kidneys display a rather delayed reaction in establishing a balance and when this occurs, especially in the case of such hypotonic solutions as tap water which are readily absorbed, there results a diminution in the tonicity of the blood due to the relative dilution of the blood chlorides with subsequent osmotic disturbances. Although in this case no blood chloride determinations were made, the definite history of an excessive fluid intake as well as the typical symptomatology appear to be quite conclusive evidence of the presence of a condition of water intoxication.

*Summary:* A case of water intoxication is reported in which a female dementia præcox patient drank excessive quantities of tap water resulting in edema, coma, convulsions, with subsequent recovery.

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## STUDIES IN OBSESSIVE RUMINATIVE TENSION STATES

### VI. *Treatment*

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#### AIM AND PRINCIPLES OF THERAPY

The previous papers in this series were designed as the groundwork for the present discussion of treatment which, after all, from the clinical standpoint, is the aim of any continued study. It is impossible to repeat here the ideas of causation that lead to our therapeutic approach, but the following will be much more readily understood if the reader is acquainted with the previous articles.<sup>18</sup>

From the psychotherapeutic standpoint our more immediate aims are the securing of a working rapport with the individual to be treated; the aeration and discussion of troublesome and worrisome problems; desensitization to special topics to which the individual overreacts, both primary and secondary in nature; the training of the individual in a new type of reaction, (i. e., education and reeducation); the removal of situational causes as far as possible; and the treatment of any physical defects and handicaps encountered. The ultimate goal of any treatment is to restore a poorly functioning, or malfunctioning, individual as nearly as possible to normal.

Whatever may be the antecedent history of the case, it is its malfunctioning in the present that is brought to the attention of the physician and we accent the present problem and situation throughout our treatment. However, it is impossible to comprehend and deal adequately with the present without a comprehensive review of the past, since very often these patients carry into the present unconcluded experiences which had their origin even very early in life. In treating the symptoms it is advisable on the whole to avoid suppression, therefore, it is better to concentrate upon psychotherapeutic measures which recondition the reactions to offending stimuli or which remove the stimulus, rather than upon physical and chemical therapeutic agents which tend to sup-

press the emotions, although the latter may have a distinct part in the treatment at times.

We would caution anyone approaching the treatment of these conditions not to feel hopeless if one or more avenues of approach are closed. Very often it has appeared to us when some highly desirable change in circumstances or status could not be effected, nevertheless, the modification of simpler and apparently more trivial factors resulted in marked amelioration or even recovery. One, therefore, casts about for what can appropriately be done and does it, treating both causes and symptoms simultaneously.

#### TECHNIQUES

We believe that any physician presuming to treat the psychasthenic disorders should be familiar with as many of the following techniques as possible. The writer has had some practical experience with the carrying out of all but one of them, namely prefrontal lobotomy, the very nature of which places it outside the scope of his activities. He has, however, seen patients who have been treated by this technique. What is embodied in this paper is the outcome of the writer's personal experience. Successes or failures are to be considered only as they apply to him in his application of the procedures. It is important to keep in mind that what one physician may do successfully, another physician may be totally incapable of accomplishing. It is also important to consider that all these techniques have their record of successes and failures and at times failure with any one of them may be followed by success when any other method is tried. The time factor may be in part responsible for this fact.

#### *Janet's Treatment:*

Janet<sup>11</sup> advised an approach to the total personality and the total situation as he conceived it to be in psychasthenic states. With his ideas concerning the reduction of psychic potential in such conditions his aim was two-fold: 1. To reduce the burden of daily living as far as possible, and 2. To train the individual along lines of redirection of attention and energy. He therefore stressed a regimentation of the life with regularity of activity and rest, attention

to diet, the exhibition of tonic medicines and stimulating hydrotherapy, et cetera. There was much utilization of moral support and encouragement and attention to rigid training programs in muscle control, daily activities and social situations.

*The Rest and Diet Regimen:*

Weir Mitchell<sup>14</sup> and his followers' with their ideas of depletion in such states, advocated the utilization of his formal rest and diet therapy. Janet's experience with this type of approach was somewhat disappointing except that it served at times to place the patient in a condition in which other therapeutic measures could be applied successfully. Our own experience with the Weir Mitchell program has been disappointing also and although patients at times will show considerable improvement toward the end of a rigidly carried out Weir Mitchell program, on being relieved from this they quickly lapse back into their former state with anxiety, compulsions, obsessions, and complaints of fatigue. Several patients so treated have shown no response whatever. The long periods of isolation, with brooding and inactivity in the absence of stimulating environmental contacts, permit them to indulge in states of reverie, rumination, and obsessive thinking. It is possible that our lack of success has been based upon the fact that this program does not seem to us to meet at any point the realities of the psychasthenic condition as we know it, either symptomatically or etiologically.

*Suggestion:*

Similarly, except for the value of optimism as to the outcome and encouragement of the patient, suggestion has been of little use in our hands. These patients appear to us to be refractory to suggestion. This was also Janet's experience, particularly in regard to the hypnotic technique. Generally we find the anxiety and compulsive neurotics negatively suggestible or at least highly resistant to suggestion. On rare occasions hypnosis has been found valuable.

*Application:*

A. L. P., 29 years of age, married, a court recorder, Protestant, was admitted to Sheppard and Enoch Pratt Hospital, December 27, 1932, and discharged February 28, 1933. He was the only



child of a solicitous mother and periodically drunken father. He had always been ambitious and outgoing. Following participation in a political campaign he changed from plumbing to politics and a desk job. One of his duties was to find jobs for the unemployed and he was overconscientious and attentive to this. He developed anxiety feelings about his heart and stomach which he attributed to overwork. In the hospital he developed a great deal more anxiety with fear of dying, dull headaches and ideas that he might die before he would see his son again. On January 6 he left the hospital without permission in order to return home and see his son, but he returned voluntarily in a few days. In the course of the next two weeks he improved considerably, but it became necessary for him to return to work in the near future or lose his position. Hypnosis was, therefore, tried. A relatively deep state was obtained within 10 minutes with easily demonstrated cerea flexibilitas. A state of anxiety was then suggested to him and immediately ensued. Upon being asked what he feared, he replied, "Dying, bad heart, it hurts, worried about things." Since nothing more was obtained, the suggestion was made that he was dying and he was asked what it would mean to him. He replied that he was too young, there was no reason he should die, that nothing about life seemed hard to him except he would not be able to fulfill his ambitions and would not live to raise his boys because of his heart condition. He then made remarks indicating intense effort and interest in the election, his job depending upon it, and life appeared to him a long road, all fight and with no rest. He said he could not be contented to rest at his present level because with the next election he would get promotion and more money. He felt he might go as far as a state senator. The suggestion was then made to him that he rest content with his present job; that his anxiety would leave; that he would relax and feel quiet and sleepy; that there was no need for anxiety and that he could let down and get satisfaction out of life as it goes along; there would be no more pains about his heart; he was not going to die, et cetera. These suggestions were repeated by him at the close of the session. Upon awakening he said that he felt rested but would like to sleep the rest of the afternoon. That evening he was quite at ease, felt the treatment had done him untold good—a great load had been lifted out of his mind and something constructive had

been put back in its place. He wanted reassurance as to the possibility of repetition of the treatment in case he needed it later. The patient was paroled from the hospital on January 27 so that he might return to work, to be followed up by the social service department and to return to the hospital when necessary for further hypnosis. There was no recurrence of symptoms until three weeks later when in the middle of the week anxiety attacks and the heart pains recurred and he began to lose appetite. He returned for hypnosis at weekly intervals and a search was made for additional factors. It was discovered that he had much preoccupation about a prediction that his father would die of heart trouble and the fact that there was an elderly man in the office who had to take digitalis twice a day for a defective heart. His anxiety attacks corresponded precisely with the time at which the elderly gentleman took his medicine, pouring it out drop by drop and then going about the office, puffing and panting and closing the windows. Further similar factors were discovered and their connection with his anxiety explained to him. He was reassured about his heart and by the end of March he appeared symptom free and has been able, over the period of the past five years, not only to maintain his former status but to progress.

COMMENT: Such ease of hypnosis and results of treatment are exceptional and usually not to be anticipated. They raise some doubt as to the validity of the classification of this patient. Descriptively the syndrome was that of psychasthenia with the anxiety aspects predominating. Also it is to be noted that hypnosis was but one of several psychotherapeutic techniques employed.

### *Relaxation:*

Jacobson<sup>10</sup> advocates training in relaxation for states of tension. He properly points out that it is necessary to teach these patients how to relax by educating them in voluntary muscular control. In all cases of psychasthenic disorder which require prolonged treatment this technique is employed by us to attack the basic anxiety and the acute fears arising in connection with the phobias. It is our custom to spend a part of the time in the early sessions in relaxation training and the patient is instructed to carry out the relaxation technique whenever he feels growing anxiety or whenever he has to face situations of phobic significance for him. What-

ever the ultimate merits of the James-Lange theory of emotions, it has become quite evident to us that anxiety and fear can neither attain so great an intensity nor be prolonged over so much time if the skeletal postures and attitudes do not support it. We, therefore, use relaxation not as the basic treatment of such conditions, but as one of the factors assisting us in habit training.

### *Habit Training:*

Is carried out by either positive or negative practice, or both, as circumstances may determine. The positive training has two aspects. The first is an attack upon the manifest symptoms. The patient is instructed to forego, so far as possible, the carrying out of rituals and compulsions. The difficulty in complying with this request lies in the fact that when such defences are omitted, anxiety or fear ensues. If the patient can be trained to relax at such times the results are often very satisfactory, for the anxiety tends to disappear and we begin to have set up a new response to the old phobic stimulus. This seems to us to be of very great importance because it is the nature of the fear response to spread to more and more stimuli and the patient usually has a continuously narrowing field of activity. On the other hand, when properly trained, he has a technique which he can apply himself should future situations of similar import arise, which tends to protect him from the danger of forming new phobias. The other aspect of the positive training has to do with the patient's special sensitivities regarding certain topics of life experience. Among psychasthenics these experiences are very often associated with the sex life. Hence we go over in detail the sexual experiences of the patient and have him repeatedly review those to which he shows more intense emotional reactions. The fact that he can repeat these experiences in a setting in which the physician is neither shocked nor censorious often enables the patient to digest and properly evaluate the occurrence and thus overcome his special vulnerability in regard to it. When we find the patient to be unusually defensive or incapable of communicating frankly with us, we often introduce the subject of sex with a short series of interviews in which are reviewed the basic facts of anatomy, physiology, biology, psychology, and sociology of sex.

By this means the patient may be enabled to recognize that his own individual experiences are neither unique nor necessarily evidences of hopeless inferiority and his sexual impulses, emotions, experiences, and frustrations can become objective problems to be attacked in a practical way. Following such a series of interviews, it is not uncommon to obtain a complete unburdening of all the patient's conscious doubts and fears in this field.

The negative practice follows the lines suggested by Knight Dunlap<sup>6</sup> for the treatment of tics and the training away of other habits. Instead of attempting to avoid the compulsion, the patient is instructed to carry it out for 10 to 30 minutes twice a day voluntarily and at times when he is not driven by his basic anxiety, with the idea of mastering it in order to abolish it. The theory behind this is that bringing the activity under voluntary control and training the patient to start it and stop it at will finally enables him to lose his fear of being overwhelmed by it and overcomes the tendency to carry it out in inappropriate places. In our experience this has been a very useful tool, particularly in attacking the obsessions, since it is very difficult, if not impossible, for these patients to avoid the ruminative thinking tendencies and, therefore, positive training is not readily carried out excepting in the presence of the physician. While we have had little success in treating tics with this method, we have had startling results at times in such states as described here.

#### *Application of Positive Practice:*

The case of R. B. reported in our first study<sup>18</sup> illustrates the use of this technique as part of his treatment. Among other things he had the complaint of being unable to walk down the street alone because of increasing fear and anxiety. When our contacts and workup of the case had resulted in a sufficient working rapport, this patient was encouraged to make sojourns of gradually increasing length from the portals of the hospital. At first he was requested to walk a short half square and back. At his first attempt he got only a few feet from the door and ran back. He was immediately turned around and started out again whereupon, with a great deal of anxiety and evidence of tension, he managed the prescribed distance. This was repeated three days in succession

with gradually decreasing anxiety. The distance was then increased to the full length of a square and after a few days it was again increased to a walk completely around the square. In the course of a few weeks he was able to sojourn about the neighborhood and later to go downtown and back by himself, and still later, before the end of his nine weeks of hospital stay, he was able to look for a job by himself. A similar technique was used in treating his fears of physical activity, of riding on street cars, etc.

*Application of Negative Practice:*

A young man of 26 years, an instructor in psychology, had developed compulsive blasphemy with the impulse to emit such words as "God damn God," etc. This was especially annoying to him. He had attempted self-analysis and had made feeble moves in the direction of psychoanalysis without persisting and without result. He was seen by the writer on an occasion when he was departing for a distant city and one interview of about an hour and one-half duration was all that was available. The larger portion of this time was spent in history-taking and examination which, without going into detail, revealed an essentially wholesome individual who had developed conflict between his drives to conform to parental religious training and an attempt to view the world in what he conceived to be a scientific manner. The problem of his emancipation from parental dominance was also involved. It is to be noted that his career as it was developing tended in the direction of resolving these difficulties. The compulsion had been in existence for over two years. With the brief time at our disposal, it was obviously impossible to undertake any elaborate therapeutic program. The patient's discomfort appeared to be associated with the fear of emitting his blasphemies in situations which would disrupt his career and we considered that if this fear could be overcome, his discomfort would subside. At that time we had not had contact with the work of Knight Dunlap.<sup>6</sup> Experimentally, then, we instructed the patient to practice voluntarily emitting the objectionable phrases each morning on arising and each evening on retiring for a set period of 10 minutes each time. Correspondence with this patient more than a year later revealed that his compulsion disappeared immediately following the first voluntary practice period and that after a week he abandoned the voluntary practice altogether and had had no recurrence of the symptoms since.



*Unconditioning and Reconditioning:*

Unconditioning and reconditioning of the responses to phobic stimuli have been advocated for many years by both the reflexologist school<sup>2-15</sup> and by the behaviorists.<sup>17</sup> The habit training programs outlined above may be looked upon as such conditioning experiments. In this connection it is important to point out that usually the training program must be a gradual one if it is to be successful, for the subject must not be too precipitously plunged into situations where he is beset by many anxiety or fear-provoking stimuli at the same time or too continuously. If he is subjected to more anxiety than he can bear, the treatment program will be disrupted, and damage rather than help will result. The conditioning experiments require, of course, a recognition of the stimulus (or constellation of stimuli) which sets off the fear reaction in order that the patient may be gradually subjected to it and his reaction changed. The training in relaxation in anxiety-provoking situations is of similar importance.

*Dream Analysis and Free Association:*

In our therapeutic attack upon prolonged cases we regularly employ free association and dream analysis. The writer, not being psychoanalytically trained, does not consider himself a psychoanalyst in any sense. Intimate contact with psychoanalytic procedures and with patients being analyzed has however been part of his regular duties for several years. From the point of view of the writer's associates these techniques represent supplementary methods of obtaining information regarding the important noxious stimuli and opportunities for disgoring emotionally laden conflicts and through repetition becoming desensitized to them. They are equally valuable from this standpoint whether the conflict material is conscious and the patient finds himself unable to talk about it because of special sensitivity, or unconscious and unknown to the patient. We interpret dreams as representing somewhat unorganized thinking about problems continued into the sleeping state and feel that they deal primarily with present situations but often resort to representations in terms of past experience of similar import. We recognize also that the dream content is often



presented through the medium of symbolic formulae and distortion. We ask our patients to report regularly all dreams. If the content is such that the problem with which it deals is easily accessible, we spend enough time to bring this problem clearly to the fore as an objective fact to be dealt with consciously. Otherwise, we ordinarily do not spend a great deal of time with such material. We use the free association technique in a somewhat similar manner, namely with the idea of uncovering problems to which the patient is presently reacting and bringing them to an objective focus. It also serves to reveal their origins and the patient's way of thinking about them and dealing with them, the ineffectiveness of which becomes apparent and can be pointed out. Altogether it is seen that we handle these tools as specialized techniques of history-taking, aeration, desensitization, and reeducation. Word association tests may also be used in a similar way but we find little need to resort to them in this group of patients.

*Psychoanalysis:*

Psychoanalysis has been advocated for the treatment of these conditions and judging from case reports in the literature and patients observed in this hospital, it has at times been quite successful.<sup>8-9</sup> Aubrey Lewis<sup>13</sup> reported in his series of 50 cases that 17 who were treated by intensive psychotherapy of a non-Freudian analytic type did rather poorly as compared with 31 who were treated otherwise. It is pointed out that the intensively treated patients were the more difficult ones. It is clear, however, that psychoanalysis is by no means uniformly successful. Moreover it is somewhat extravagant of both money and time, especially in the light of the fact that a great number of these patients will respond rather quickly to other shorter and less costly techniques. The failures of analysis are by no means all to be attributed to the refractoriness of the patient. Our experience leads us to believe that on the whole a good or poor result is more dependent upon the individual carrying out the therapy than the particular technique he may utilize. Nevertheless, psychoanalysis may be clearly indicated when other methods of approach are not available or fail, when the time and money are at hand and when the psychoanalyst is sufficiently interested to desire to work with this particular pa-

tient or the patient especially desires it and shows some capacity to withstand the stress and strain of the procedure.

### *Play Techniques:*

We have recently applied play techniques to the treatment of these cases with some degree of success. The method utilized follows along the lines developed by Conn,<sup>3</sup> Klein,<sup>12</sup> Allen,<sup>1</sup> and others for use with children. A series of dolls made up to represent adults and children is set up in the pattern of some characteristic situation to which the patient reacts adversely and the patient is requested to dramatize with acts and speech the ideas and behavior of the dolls. This technique should never be omitted in refractory or difficult cases occurring in children. With adults it has been found useful at times in those situations in which the patient has become unproductive over a period of several therapeutic sessions. Care must be observed in exhibiting this technique to adults, particularly in this diagnostic group, because they are very sensitive and associate such a procedure readily with ideas of "cutting out paper dolls," and so forth, which the lay person thinks of as "insane" behavior. The technique is applied only long enough to bring out some new topic for discussion when conversational, free association, or similar techniques are substituted.

### *Application:*

A young man who had made no progress in his treatment over a period of more than two weeks was given an adult male and an adult female doll and asked to create some dramatic situation between them. We knew that he had great difficulty in his relationships with women. He found himself unable to produce any conversation or drama between the dolls but sat with each propped on an opposite knee. He was very tense and fidgeted a good deal. From time to time he absent-mindedly permitted the female doll to lean with her face against that of the male. From time to time also he raised both up so that they came face to face in the center. When he left the office he laid them down with the female on her back and the male face down on top of her. The next day these activities were brought to his attention. He then recalled them but denied any awareness of them or their possible meaning at the time. However, with this subject matter introduced as a topic

for discussion, it was discovered that he had developed erotic cravings toward a female member of the hospital personnel, was greatly frustrated by it not only because he knew any approach to satisfaction was taboo on the basis of hospital regulations, but also because he felt he had no technique by which he could consummate his desires even if the situation and conditions were favorable.

A young woman patient, given the dolls to play with, dramatized the entire evolution of her feelings of being somehow inadequate. She began at infancy with discrepancies in the attitude of her parents brought about by their desire to protect a neurotic older sister of the patient, leading through chance remarks of visitors to her stepmother and a series of experiences in puberty and early adult life in which her relationships to the opposite sex terminated invariably in pain and dissatisfaction to herself.

#### *Social Treatment:*

Since the reaction to prolonged insecurity is anxiety and since these diffuse anxiety states are the foundation of psychasthenic disorders, one cannot anticipate the recovery of such individuals if the reality situations surrounding them are such as to produce continued and prolonged anxiety. Moreover, changing attitudes toward emotional problems (particularly those of sex) intimately involve social relationships and it is necessary to investigate the social situation (marital or parental relationships, etc.) to determine whether correctible frustrating attitudes are operating and to readjust them if possible.

In our special situation here the need is met in the beginning by hospitalization of the patient and rigid control of visits from the family and friends, at least during the early part of the patient's stay. Many of these patients do not actually require hospitalization but we feel that any severe psychasthenic should be hospitalized during the initial period of treatment as this seems to shorten the therapeutic period and the complete study is very much facilitated. However, most of these patients can be permitted visits or parole or discharge from the hospital rather early provided that one is dealing with cooperative relatives and is sufficiently aware of the problems of adjustment involved to be able to discuss them with the family.

In the beginning interviews with relatives from which the patient is excluded are necessary and desirable in order for them to have the opportunity to air their grievances and afflictions without embarrassment. Later, however, especially when it becomes a matter of adjusting such things as socializing programs or alterations of sexual technique, joint interviews with the patient and the relative are imperative if much difficulty is to be avoided. If such joint interviews are not conducted the two parties are apt to understand things quite differently and frequently utilize against each other misstatements attributed to the physician. This tendency is greatly minimized where the joint interview is held. If both parties are comfortable with the physician, the frank expression of hostile and conflicting attitudes may lead to their adjustment. All of this may materially facilitate treatment and shorten the period of illness.

At times one finds the psychasthenic patient employed in types of work which are unsuited to his temperament and needs. Occupations which require frequent correct decisions are particularly trying and in severe cases should be given up as long as the patient is ill.

We also utilize as far as possible all of the available socializing influences of the community including church and school contacts where appropriate; membership in clubs or classes in art, music or dancing if they fit the special needs of the case; assistance in helping the patient to find suitable employment if he is unemployed, and others. In this connection it is important that the socializing program be gradually developed during the course of treatment as the patient develops capacity to utilize his opportunities. These patients are frequently introverted in attitude, extremely sensitive to failures and rebuffs and must not have too great a burden placed upon them all at once. A procedure frequently followed by us in beginning our socializing program is outlined in the section on occupational and recreational therapy.

#### *Nursing Care:*

A special aspect of social treatment within the hospital is seen in the relationship between patient and nurse. At best the physician is with the patient an hour a day. For the balance of 23 hours the nursing personnel is in immediate contact, stimulating favor-

ably or unfavorably and reacting to the patient. It is imperative, if the patient is to save much time in treatment, that this situation be handled effectively. Of first importance is the need for a steady, consistent, friendly and helpful attitude. The steadiness and consistency is secured through a strict adherence to hospital rules and regulations. One avoids repeating the original family situation in which regulations were erratically enforced. Vacillations between too permissive and too restrictive supervision are to be avoided. One should also avoid the oversheltering, pampering attitude that subscribes to the patients' fears and rewards them with special attention and special privileges. Too much urging and nagging are detrimental.

These patients ordinarily require no other completely permissive outlet than the doctor's office. They can, and should be expected to, keep up with the level of a fairly normal ward population. If they fail to do so, they should be placed in ward situations in which their behavior places no undue strain upon personnel or other patients. If permitted, they exploit every social contact for the sake of secondary gain even when they know better, and criticize doctors and nurses for indulging them.

This aspect of their behavior is doubly important because nurses who have attempted to help these patients by special consideration for their symptoms find the patient becoming progressively worse and making more demands. Frustration becomes inevitable, the nurse becomes exasperated, and the patient is aware of being rejected. Many of these patients can see through this entire series of events. The physician should have frequent conversations with the nurses in order to ensure that such rapidly developing antagonisms do not occur.

The ordinary vicissitudes of interpersonal relationship within the hospital are usually not too difficult for the psychasthenic to manage provided he has a little expert guidance. Whatever problems arise in this way the patient is asked to discuss in terms of his own responsibility for them and of how he might have managed differently. The attitude is that of helping the patient to learn from experience to help himself rather than intervening in his behalf. Only when extreme fear crises arise and schizophrenic dé-



nouements are threatened does one have to resort to the protective, permissive, social setting that schizophrenics require. Since the pressure upon the patient can be eased to a great extent by free access to the physician and regulating the social pressure in terms of ward setting, such crises can be readily avoided as a rule.

*Prefrontal Lobotomy:*

Freeman and Watts<sup>7</sup> have recently advocated the utilization of Moniz's technique of prefrontal lobotomy in patients with psychasthenic disorders with the idea that this procedure will render them incapable of developing the tensions that make the obsessions and compulsions so distressing. They claim excellent results in several very refractory cases which they have treated. It is our opinion that such a procedure should be resorted to only when the possibilities of other therapy have been thoroughly exhausted. So far we have had no occasion to recommend it.

*Medical Treatment:*

The physical care of these patients is of great importance. We begin our approach to the treatment of any mental patient with a careful physical survey followed by necessary procedures to correct any condition present. Here we are concerned with focal infections in teeth, tonsils, sinuses, prostate, states of malnutrition particularly with vitamin deficiency, possible beginning gastric ulcer, states of anemia, uncorrected visual defects or painful feet due to improperly fitted shoes or fallen arches. While such conditions are not frequently encountered, they occur occasionally and should be corrected in order to give the patient the best chance of benefiting from other therapeutic measures instituted.

The diet of these patients should be the same as that of other members of their family or the institution in which they are residing at the time. We feel that it is inadvisable on the whole to concentrate their attention upon the gastrointestinal system if it can be avoided. We encourage our patients to partake of all foods including those to which they have psychically determined dislikes in order to desensitize them to these stimuli as well. Such patients frequently come with so many dietary ideas, dislikes and idiosyn-

crasies that the possibility of adequately feeding them becomes a real problem. Of course, in situations where the physical status of the patient may demand, diet appropriate to the physical condition should be prescribed.

Sedative drugs have frequently been employed in these patients with a view to reducing the emotional tension and also to secure sleep. On the whole our experience indicates that this is usually not a beneficial procedure, for such patients become quickly addicted to sedatives and we have seen a number of instances in which such therapy has led to frank drug psychoses. For securing reduction of tension and sleep we utilize and recommend sedative baths or packs with the ingestion of hot milk at bedtime. This coupled with a daily program of recreational and occupational activity is sufficient to meet any needs that arise. When patients are particularly anxious and threatened with a disturbing night, an interview with the physician will often serve to objectify the causes of the anxiety and will procure better and more restful sleep than sedatives can give.

Stimulant and tonic drugs, such as strychnine, benzedrine, et cetera, have been prescribed in some of these cases. In a small series of patients whom we treated with benzedrine under very carefully controlled conditions, no benefit was to be obtained.<sup>19</sup> Again it is our opinion that these patients are better off if they avoid medications unless absolutely essential. Where stimulation is desired, we recommend the use of stimulating hydrotherapy and massage, invigorating exercise, lively group games, etc.

The same considerations apply to the use of cathartics such as bella donna and syntropan in the treatment of the spastic colitis which one often encounters. The constipation and colitis are physical manifestations of anxiety and fear. One cannot expect to cure such states in these patients until the basic anxiety is relieved. For the constipation one prefers the establishment of regular habit, the assurance of sufficient roughage in the diet, and the supplementary use of mineral oil as needed; for the spastic bowel, relief of anxiety and tension and training in relaxation are of fundamental importance.

*Occupational and Recreational Therapy:*

These patients should be placed on a full activity program as early as possible. Certain precautions are to be observed in the prescribing of occupational therapy. On the whole it is best to assign tasks that fall well within the range of their capacities and that can be completed in one sitting. In seriously ill obsessionals who attempt to carry over a task from day to day, it is not uncommon to find their preoccupations with perfectionism forcing them to undo each day all that they have accomplished so that the task is never ending and the satisfaction from it is not forthcoming. In such cases the patient should be encouraged to complete the work and accept it as it finally comes out and should not be permitted to do and undo the same task over and over again. On the whole, unless the patient has special aptitude, it is better for him to be occupied with coarse material and gross projects rather than those requiring meticulous attention to detail.

Many of these patients are socially inadequate and, either from lack of natural endowment or lack of experience which would develop their latent potentialities, they often exhibit relatively poor neuromuscular coordination and are at a disadvantage in physical competitions. Exceptions to this are to be found in those patients who have utilized obsessive athletic interests over a period of years as a defence against their feelings of inferiority and insecurity. Wherever these sensitivities are encountered we begin our first recreational program with individual physical training in a gymnasium. During this initial period when the patient is most awkward in the use of his body and limbs, the only person present with him is the instructor. He is encouraged to work out on the stationary bicycle and the rowing machine, to throw the medicine ball and carry out similar individualized physical cultural pursuits. After his strength and muscle control develop and he feels more secure, he is gradually introduced into loosely organized group activities in which special skill is not required, such as volleyball. He is also gradually introduced into competitive activities, such as singles in tennis or badminton where he remains an individual. Depending upon his progress he is gradually or rapidly advanced into more closely knit athletic groups, such as doubles in tennis, team play

in baseball, and so forth. The idea of this program is to prepare the individual in such a way that he will not be unduly exposed to teasing, slights or disadvantageous remarks on the part of the group when he joins it.

*Distributive Analysis and Synthesis:*

In working with any patient we attempt to approach the problem from a psychobiological point of view. We, therefore, begin with careful history-taking, mental, psychological and physical examinations and necessary laboratory work. These routine examinations are looked upon as general surveys useful principally from the viewpoint that they reveal certain leads to be followed up more adequately. In a certain sense each subsequent interview with the patient produces supplementary history. When sufficient data are gathered, the patient's reaction is formulated in terms of his natural endowment, life experience and present mental and physical status in relationship to the total situation surrounding him. These formulations have to be recast from time to time during the course of any prolonged treatment. From such a study one finds clearly discernible factors that have some obvious causative significance for the patient's maladjustment. These factors can be evaluated as to their modifiability and attention can be directed toward those items which are more amenable to change. From the very beginning one sets desirable goals to be achieved and some attempt is made toward formulating a definite objective for each psychotherapeutic interview. Nevertheless, since these interviews are dynamic interactions between the personality of the physician and that of the patient, such objectives must not be striven toward too rigidly and one must be able and willing to change them as the situation demands. We also hold that it is neither necessary nor desirable from the therapeutic standpoint to iron out all of the patient's problems, our main objective being to train the individual in ways of meeting such difficulties for himself.

Whenever possible it is desirable at the close of each interview to get the patient to formulate for himself what progress has been made and to raise any questions that may disturb him. If the patient is to become anything other than a dependent individual who

has to have the world modified and changed to meet the rigidities of his personality, it is important that some of the problems must be left as practical exercises for him to carry out in self-adjustment. Even in the very beginning we prefer, if possible, to confine our functions to those of helping the patient to objectify the problems and making sure that all possible solutions and their probable consequences are clearly understood. We seldom give positive advice as to any preferential solution or procedure unless such advice is essential to prevent disaster. In other words, we try to help the patient to help himself.

What is actually done is also governed to a large extent by what is possible. At times one has only the possibility of seeing such an individual for a single interview and the availability of skilled psychiatric help may be so limited in the particular circumstances that it is necessary to accomplish as much as possible toward ridding the patient of his symptoms. It is often better to strive for practical results in alleviating symptoms or teaching the patient to live with them than to pursue ideals.

A careful review of all our successful cases fails to reveal any common factors or principles at work in recovery. In many instances, however, the most important factors appear to be the attitude of helpful, noncensorious interest on the part of the physician and the supplying of the patient with the possibility of a solution of his problems in such a way that he can still save face. Where these factors operate together, the choice of method becomes relatively unimportant and interpretation need only enable the patient to integrate his experiences into some rational whole. From a therapeutic standpoint it is not so important that the explanations be absolutely correct as that they fit the individual's needs and can be harmonized with his own basic life approach or provide him with a new one which he can accept. Rosenzweig<sup>16</sup> has given a rather brilliant formulation of this problem.

In the light of all this it is clear that one cannot appropriately talk of the superiority of one therapy to another. As Aubrey Lewis<sup>13</sup> pointed out, patients of this type frequently recover after treatment has been discontinued and improvement often can be correlated with such factors as marriage, or divorce, the obtaining of



employment, or change of economic and social status rather than with any special psychotherapeutic effort. Diethelm<sup>5</sup> also has pointed out that considering the good results obtained by all methods, the spontaneous recoveries, and the recoveries after treatment has been discontinued, it is unsafe to contend that any one therapy is superior to any other. Because of these facts we have refrained from giving statistical results for the reason that they would reflect correctness of judgment of the writer as to what might be utilized in this or that case and his individual skill in the application of this or that technique rather than any inherent validity of the treatment itself.

What is necessary is that the aspiring psychiatrist should be equipped with all the available therapeutic resources and trained in using them. He should be familiar with his own special proficiencies and limitations through the experience of actual serious trial and observation of results. He should be adaptable enough to vary his procedure to fit changes in the patient's condition and situation. And he should be willing to modify his procedure as the occasion demands.

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## BOOK REVIEWS

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**The Basis of Clinical Neurology.** The anatomy and physiology of the nervous system in their application to clinical neurology. By SAMUEL BROCK, M. D. William Wood and Company, Baltimore, 1937. 360 pages. \$4.75.

This work is an illuminating treatise maturely expressed in the fundamental terms of the basic sciences. Dr. Brock has presented his material with discriminating judgment. He has included only such information as is established and essential for an understanding of clinical phenomena. Innumerable items from a large, recent bibliography have been assembled with the older neurological knowledge into an orderly, coherent text.

The work is well up to date and also contains suggestive leads for the solution of a few of the perplexing problems of clinical practice. Careful attention to arrangement has provided easy reference to the mechanisms and symptoms which are described. The illustrations are carefully chosen and some are particularly instructive. Although the book does not appear satisfactory for introductory study, it will be invaluable to readers with some background, as it is helpful in clarifying and correlating neurological investigations.

**A Preface to Nervous Disease.** By STANLEY COBB, A. B., M. D. William Wood and Company, Baltimore, 1936. 173 pages. Price \$2.50.

This excellent book carries out the intention of the author by presenting a brief correlation of the mechanisms of the nervous system. The subject matter, which embraces both neurology and psychiatry, covers the subdivisions, functions and integration of all the parts of the central nervous system and is expressed only in the light of the better known and more generally accepted facts of anatomy, physiology and pathology. Occasionally, this factual information is given so briefly that it appears as a suggestion which is confusing to the reader. A few schematized illustrations accompany the text and brief bibliographies follow each chapter.

The book should be particularly valuable to medical students as the introductory study is simple, direct and clear. The general practitioner will find in this treatise a good, rapid review of basic science information. From those whose chief interest lies in neurology, the book will draw criticism for its omissions and grossly drawn conclusions. However, the book is highly recommended for its elementary scope.

**The Intellectual Functions of the Frontal Lobes.** By RICHARD M. BRICKNER, B. S., M. D. The Macmillan Company, New York, 1936. 354 pages. Price \$3.50.

This book reports the study on a patient from whom a large portion of both frontal lobes had been removed surgically by Dr. Walter Dandy. The removal was performed in two stages and was done for a tumor of the meningioma type. In the two removals a total of 116 gms. of brain tissue or about 9 per cent by weight of the total amount of the brain was removed. The right specimen removed was somewhat larger than the left.

Most of the studies reported in the book were made on the patient in the second postoperative year. These consisted of complete neurological examinations at intervals, various psychological examinations and observations with detailed records of the patient's behavior in everyday tasks at home, with friends, at social gatherings, et cetera. Comparison of the behavior of the patient during the period of observation with similar aspects of his behavior before operation was made by interviewing a number of friends, members of the family and others.

The book is divided into three main parts. The first deals with the patient's history prior to the observation period and with comments from the literature on symptoms of frontal lobe injury. Part Two deals with observations made on the patient and includes several sections in which are reported symptoms in the intellectual sphere with an emotional coloring, symptoms in the intellectual sphere without emotional coloring, additional tertiary phenomena, unclassified symptoms, special symptoms and the reports of the various psychological tests. Part Three deals with the interpretation of the patient's phenomena and some discussion of possible underlying physiological and anatomical aspects of the frontal lobes.

The removal did not involve motor or sensory areas of the brain and thus primary motor and sensory deficiencies did not occur. Most of the disability was confined to the more complex psychological aspects of the patient's life as had been previously reported for both man and animals by other authors. All the symptoms, which the author considers to be basically intellectual in nature, have been divided into two main subgroups: those with and those without a predominant emotional coloring. The symptoms in the patient's productions with an emotional coloring have been further divided into those showing an impairment of restraint in controlling or concealing emotion and those showing some preservation of restraint. In the first group are such phenomena as boasting with self-aggrandizement, expression of mild hostility again with self-aggrandizement, evidences of super-

arrogation with free expression of angry, aggressive negativistic puerile impulses and some impairment of "social sense," "character and personality change," loss of love for his family, impairment of "moral sense" and so forth. In the group of symptoms without emotional coloring the patient showed apparently some limitation in his capacity to associate or synthesize simple mental entities to a complex degree. This was manifested by a certain distractibility or difficulty in maintaining fixation of attention, some impairment of capacity for selection and segregation of units of intellectual activity, some impairment or abnormality of retention and some impairment or abnormality of learning capacity. Other so-called tertiary phenomena such as judgment, abstractive ability, appreciation of situations, capacity of evading or "bluffing," a sense of humor, orientation, initiative, facility of cerebration, degree of insight into the gravity of the situation, euphoria, use of jargon, compulsiveness, incontinence, and so forth, were also considered.

According to the author the primary deficiency shown by the patient was an impairment of the process of synthesis of simple mental units into more complex function. He feels that although the symptoms as they appear clinically after operation show apparently qualitative variations from those appearing before operation, one is dealing fundamentally with a quantitative rather than a qualitative change. He feels that this diminution in the ability to synthesize simple thought processes in the more complex structures also fits in with the conclusions Bianchi derived from his experiments. He feels that although there are some differences in the interpretation of frontal lobe symptoms between his view and that expressed by Goldstein, who believed the fundamental difference was the impairment of abstract thinking, fundamentally the two conceptions are very close together.

The book is an interesting study of an interesting case. The observations are rather detailed and one could only wish, as did the author, that further consideration on an objective basis of the patient's basic personality as determined by psychoanalytic procedure might have been obtained. Although one might not expect to learn much from this book concerning fundamental physiological, anatomical and psychological relationships of the frontal lobe, especially of the theories accounting for the deficiencies in frontal lobe lesions, it should undoubtedly be read by neurologists and psychiatrists alike. It tends to emphasize to a fine degree the prime characteristics of organic frontal lobe deficiency. To use the author's own words, "many of the symptoms shown fit well into the clinical picture of the general parietic."



**The Pharmacological Treatment of Schizophrenia.** By MANFRED SAKEL, M. D. Revised English edition (translation by J. Wortis, M. D.) Nervous and Mental Disease Publishing Company, New York and Washington, 1938. 133 pages, plus index. Price \$2.75.

This book, ably translated by Dr. Wortis, is an enlarged version of a series of articles from the *Wiener medizinische Wochenschrift*, 1934-1935. It also contains additions incorporated from the researches and studies of other workers in the field of pharmacological shock therapy. In all there are eight chapters dealing with the various aspects of the treatment.

Chapter 1 gives an introduction and outline of the method and traces the development of the treatment. A description of the several phases into which Sakel divides it, together with a discussion of wet and dry shock, insulin dosage, equipment, and management of patients, is included.

The second chapter refers chiefly to insulin dosage and laboratory findings. It contains numerous curves showing the relationship between the blood sugar level, blood pressure, pulse, respiration and temperature. An attempt is made to trace the relation of pulse, blood pressure, temperature and blood picture to the blood sugar values and to the compensatory adrenalin production after insulin injection, or to the activity of the vegetative nervous system. In the third chapter Sakel considers hunger excitement and the psychological management of the patient. He points out the vulnerability of patients to psychological factors while improving under the influence of the treatment and advises that the patient be sent home as soon as possible after the treatment is terminated. As well, in his opinion, superfluous examinations are contraindicated. Chapter 4 is devoted to the various modifications of pharmacological shock and the individualization of treatment. Such methods as the use of auxiliary drugs, quick interruption of hypoglycemia by intravenous glucose, timing of interruption, encouraging the occurrence of wet or dry shocks by the introduction of external stimuli during the second or third hours of hypoglycemia, together with the indications for these variations of management, are outlined.

In Chapters 5 and 6 histories of ordinary cases and of those showing complications are given. Here the varied experiences encountered are gone into in some detail for the reader's benefit. Chapter 7 is devoted to the consideration of the therapeutic mechanism of pharmacological shock and its working hypotheses. Clinical observations and conclusions make up the last chapter of the book; aphasia, psychotic reactions during hypoglycemia, hysterical reactions, amnesia and results are herein discussed.

In view of the modest, careful manner in which this useful book is written, there is little in the way of criticism which can be offered. However

the reviewer feels that a front view of the patient in Figure 2 would be more informative than the side view now employed. In Chapter 2, why not translate the German abbreviations appearing on the different curves into English for the sake of consistency? Although Sakel's style in this book cannot be read with such facility as can most of his English papers, it is none the less understandable.

All the problems encountered in pharmacological shock therapy are not covered in this book but after reading it a good general perspective of the situation is obtained. For this purpose the reviewer heartily recommends it to all those who are particularly interested in this form of therapy.

**Practical Neuroanatomy.** By J. H. GLOBUS, B. S., M. D. William Wood and Company, Baltimore, 1937. 387 pages, with index. Illustrated. Price \$6.00.

Dr. Globus has given to the student a practical neuroanatomy text, as its title indicates. Throughout the entire book the anatomical investigator is encouraged to make careful and accurate observations. Assignments calculated to give sufficient work in the laboratory over two-hour periods make up a large part of it. However, these are outlined with the provision that additional textbooks of anatomy be used as supplementary reading and reference while the actual laboratory work is in progress. The more important gross structures of the central nervous system are brought into view by semicompleted drawings prepared from carefully dissected anatomical specimens. The outlines were drawn with the aid of the projectoscope from selected transverse and longitudinal sections of the brain stem and spinal cord.

This interesting work is divided into three parts. The first is devoted to the study of the external and internal structures, and cytological composition of the brain and spinal cord. Part two deals with the peripheral nervous system, the autonomic nervous system, practical lessons in applied anatomy and physiology, the various reflex circuits which are found in the brain and spinal cord, clinical examples of well recognized diseases of the nervous system and methods used in the preparation of nervous tissue for the study of its microscopic structure. The third division contains the outlines of various portions of the central nervous system gross structure. The pages on which the outlines are found are perforated so that the student can detach them from the book, take them to the laboratory, and later replace them by the application of gummed paper. The anatomist is expected to fill in and label the outlines with pencils of different colors.

Much can be said in favor of this carefully planned anatomical work. By its use the student is called upon to do extra reading on related subjects and to familiarize himself with other anatomy texts. The filling in of the various structural outlines enables him to firmly fix in his mind a large amount of material which otherwise could be retained only by Herculean feats of memorization. Dr. Globus' book is unique in that it attempts to correlate function with anatomical structural units. In this way much interest is injected into the students' task of mastering the understanding of central nervous system anatomy. Supplemented by other anatomical reading in the laboratory this splendid text can be recommended to the psychologist, neurologist, general practitioner, and medical student as a worthwhile aid in the comprehension of nervous system function and fabrication.

**Studies in Sibling Rivalry.** By DAVID M. LEVY, M. D. Research Monograph No. 2. The American Orthopsychiatric Association, 1937. 96 pages.

This monograph presents reprints of studies originally published in the American Journal of Orthopsychiatry. The investigations were begun in the Institute for Child Guidance in New York City. They offer a detailed analysis and standardization of a useful play technique applicable to the problem of sibling rivalry and its pathological and therapeutic implications.

The first paper, the shorter one, deals with the Use of Play Technique as Experimental Procedure in summary form. The second and more extensive paper comprises a detailed study concerned with Hostility Patterns in Sibling Rivalry Experiment.

The investigation was made on 12 three- and four-year-old boys and girls who were faced with a standardized play situation of dolls, namely, a brother and sister doll observing a new baby at the mother's breast. Reactions of the child to this setting of dolls were reported in detail and classified. Graphs for the various patterns of hostility were illustrative of the observations.

New terms, with explanations, are added to the vocabulary of child guidance. The experimental setting and the reactions of the child together with plausible interpretations are placed before the reader in a clear form although there are repetitions for the sake of completeness. The results and therapeutic implications of interest to the child guidance psychiatrist, especially deserve further study.

**Zur Entdeckung der Insulinschocktherapie bei Akuten Geisteskrankheiten, insbesondere bei der Schizophrenie.** (Discovery of insulin shock therapy in acute mental diseases, particularly schizophrenia.) By JULIUS SCHUSTER. Budapest: Druckerider Pester Lloyd-Gesellschaft. 90 pages. Price 2 pengö.

This book contains a claim of the author for priority to Sakel with reference to the use of insulin in the treatment of psychoses. Wagner v. Jauregg's fever therapy and various early attempts at shock therapy are recalled, and it is pointed out that as a logical continuation of these lines of thought the author arrived at the use of insulin at an early date, soon after the discovery of the hormone. Schuster considers insulin as an anaphylactogen and he interprets the effect produced as an anaphylactic shock. He conceives of dementia præcox as a hereditary, endogenous mental disorder. The author of this work started successful insulin treatments as early as 1922; reference is made to one of his earlier publications (1926), in which the results of his studies on the subject of insulin were outlined.

The present study comprises a report on a series of about thirty mental cases, in which insulin was successfully used. It is to be noted that not only cases of dementia præcox, but predominantly manic-depressives and also epileptics and psychopaths were included in this group. Insulin was given over similar periods of time but in somewhat smaller doses than are generally given today. Coma, although it usually occurred during the course of the treatment, is not stressed as an essential factors in the treatment.

The book warrants criticism from various angles. No clear distinction is made between anaphylactic shock and hypoglycemia. There are wide excursions into the fields of physiology, endocrinology and biochemistry, which to the reviewer seem entirely superfluous as they are not directly connected with the subject under discussion and are apt to render the report unsystematic and confusing. A great number of case reports are unsatisfactory, containing either a profusion of unimportant details or a lack of essential points of information (for example, diagnosis).

The text contains rather too many unfinished sentences and faulty grammatical constructions. A thorough orthographical recheck is also indicated. Finally, the title itself is a contradiction in its general labeling of schizophrenia as an "acute" mental disorder.

With the exception of the author's challenge to Sakel's priority, the work offers no new contribution to the subject of insulin treatment. To the reviewer it seems that Schuster's claim is not well founded, nor is his presentation of the evidence very convincing.

**The Autobiography of a Purpose.** By WILLIAM ALANSON WHITE, M. D. Doubleday, Doran and Company, Inc. Garden City. 1938. 273 pages and bibliography. Price \$3.00.

Those who knew and loved William A. White, and their number is legion, as well as the many who knew and admired him by his writings alone will welcome this book, a revealing story of his life. It admirably supplements one of his last books, "Forty Years of American Psychiatry" giving, as it does, an intimate picture of the man who was in the forefront of the developments there recorded.

White, who came of a middle class family of New England ancestry, was born in Brooklyn in 1870. He early acquired a taste for learning and while yet a child read books which one would scarcely expect to see in the hands of any but a mature scholar. He himself credits his taste for medicine to the fact that he lived within half a block of the Long Island Medical College, where he used to play around the entrance, sometimes venturing in and finally making friends with the janitor who tolerated him in various rooms at times when they were not occupied. When only 13 years of age, he had read Herbert Spencer's "Factors in Organic Evolution," a book which seems to have set the direction of his later interests. At the age of 15 he secured, by competitive examination, a scholarship to Cornell University and left high school at the end of his third year to continue his studies at Ithaca. He was admitted to the freshman class with a number of conditions, which made his first year particularly difficult. Added to this, was the necessity of earning a part of his expense money. However, with dogged perseverance he continued his work under conditions which would have discouraged almost any boy of 15. This experience must have strengthened a habit of industry which had always been one of his traits. He had no idle moments and was gifted with a perseverance which forced him to complete whatever he undertook. In early life he formed the habit of spending a fixed number of hours daily in reading scientific or educational books and he never started a book that he did not finish. He read carefully, making marginal notations and references. Even though prevented from doing so earlier, he would sit up late at night, sometimes until 2 or 3 o'clock, to complete the reading which he had planned.

After several short internships to secure experience which he thought would be useful to him, he entered the State hospital service at Binghamton in 1892. Here, besides his medical duties, he organized and conducted an orchestra, choir and band, although he says he never had much of an ear



for music, and was chief of the fire department. As first assistant physician, he had administrative duties and also was in charge of the reception service.

At the age of 33, he was appointed superintendent of the government hospital, Saint Elizabeth's at Washington, where he spent the remainder of his life. The institution, small at that time, was developed under his supervision to one of the leading mental hospitals of the world. At Washington he soon came in conflict with certain political and, what might be called grafting practices which, because he steadily refused them his sanction, soon resulted in charges against him before Congress. The investigation, prolonged over a period of about eight months, ended in complete vindication of the charge of inefficiency. Not only that, but the needs of the hospital for more and better buildings to obviate its overcrowding and to afford more satisfactory classification became apparent and led to increased appropriations for new construction and for maintenance. Thus, in the end the investigation proved to be the opportunity which White turned to his own advantage and to that of the institution.

Dr. White was prominently identified with educational activities. He is the author of a number of important books and was widely sought in medicolegal cases and as an interesting speaker at medical and scientific gatherings. White was a unique character. His greatest asset seems to have been to seize upon suggestions from widely different sources and by synthesis and deduction make use of them for the explanation of obscure problems. He was a leader of rare charm and his passing leaves a niche vacant which no one person will be found to fully occupy.

**Concepts and Problems of Psychotherapy.** By LELAND E. HINSIE, M. D. Columbia University Press, New York. 1937. 180 pages, plus bibliography and index. Price \$2.75.

Today when there are so many currents in psychopathology headed in directions more or less diverse, it is hard to say which, if any, deserves to be called orthodox. One is reminded of the Quaker who defined the term by saying "Orthodoxy is my doxy and heterodoxy is your doxy." Psychoanalysis, psychobiology, individual psychology and analytical psychology are examples of schools, each of which has a considerable vogue. What each stands for and how each conception differs from the others are questions which perplex the beginner and indeed many who have had wider experience. Hinsie, in this book, attempts to supply this orientation. With judi-

cial clarity, he presents to the reader the field of psychiatric concepts with no disposition to champion any one.

The introduction is historical. It is a general survey of the past three decades. Figures from the mental hygiene clinics are quoted to show that psychoneuroses are probably the most common partially disabling illnesses in the community. If that estimate is not correct, it will be conceded that at least the number in the community, including cases identified at mental hygiene clinics and those who do not voluntarily seek treatment, constitute a considerable total. It seems evident, too, that psychotherapy offers the most promising plan of treatment.

The largest section of the book is taken up with a discussion of psychoanalysis. Those familiar with Hinsie's writings know that he is friendly to the views of Freud and has respect for the contribution which psychoanalysis has made to psychiatry.

Psychobiology is usually associated with the name of Adolf Meyer, although the term was found in medical literature at an earlier date than Meyer first began to use it. The earlier references, however, were to the study of psychology by biological methods and whatever is meant by that phrase of Knight Dunlap's—"psychological physiology." Meyer's conception of psychobiology seems to be the study of the interaction of the psyche with all possible environmental forces, including its own soma. It points to the fruitfulness of every possible investigation of the behavior of individuals. Meyer refuses to be hampered by tradition or dogma and has insisted upon freedom of inquiry and research. For these reasons, one can hardly say that Meyer heads a school of psychiatry or psychology; he would be the first to refute such a statement. A school necessarily has limitations and Meyer admits none. His leadership rests upon the breadth and soundness of his view.

The individual psychology of Adler and the analytical psychology of Jung are dealt with more briefly. The theories of these authors at one time appeared to offer greater promise than has since developed. Neither of them was a pioneer. Each took his start from the earlier work of Freud and both concepts are to be looked upon as variants of the larger theme.

The book contains a chapter on statistical evaluation of psychotherapeutic methods by Carney Landis.

Dr. Hinsie has in this small book covered admirably the field chosen for his purpose and the work is recommended to all who seek its helpful and enlightening contents.

**A Pediatrician in Search of Mental Hygiene.** By BRONSON CROTHERS, M. D. The Commonwealth Fund, New York, 1937. 271 pages. Price \$2.00.

The author of this book is well qualified in the field of pediatrics and its implications, in his capacity as assistant professor of pediatrics, Harvard Medical School, and as visiting physician to the Children's and Infants' Hospital in Boston. He has had and has ample opportunity to contact mental hygiene and child guidance problems in his practice. In this work his aim is to assist his fellow pediatricians in finding an effective orientation in the "exciting, promising and confused field of mental hygiene."

The first part of his book, *Mental Hygiene in the Practice of Medicine*, offers interesting viewpoints concerning the evolution, philosophy and psychology of medicine as applied to pediatrics. The second part, *Mental Hygiene in the Teaching of Medicine*, outlines in a comprehensive and interesting way the possibilities of pediatric training in a children's hospital. It evaluates the case history method of teaching and the advisability and limitations of a child guidance setup. The last section of the book, *Towards Meeting the Pediatrician's Responsibility*, demonstrates some applications of mental hygiene measures as they are practised in the Children's Hospital in Boston.

One is skeptical of the author's opinion that a child guidance approach to the problems encountered in pediatric practice can be understood and applied to a certain extent by a pediatrician without "sidetracking into psychiatric treatment of adults and without losing sight of the main purpose of pediatrics." At the same time the educational and social aspects of pediatrics are considered an integral part of an interne's training in pediatrics.

The last chapter of the book gives a survey of the situation linking the physical with the mental development of the child and trying to create in the pediatrician a sound attitude towards the teachings of modern psychiatry and mental hygiene. The pediatrician, Crothers feels, should be able to observe and interpret behavior so that he can intelligently enlist the assistance of specialized child guidance groups and can continue to give adequate and effective care to the sick child.

The book is well written and is a challenge to the pediatrician to make his specialty more progressive. It is of interest to any physician dealing with children. The psychiatrist and the personnel of child guidance clinics as well may, in its reading, achieve a closer rapprochement with the pediatric specialty.

**Psychology Applied to Nursing.** By L. A. AVERILL, A. M., Ph.D., and FLORENCE C. KEMPF, R. N., A. M. W. B. Saunders Company, Philadelphia, 1938. 459 pages, plus index. Price \$2.50.

The authors say in their preface, "The present textbook in psychology has been written designedly from the mental hygiene point of view." And so it has. Beginning with Chapter I, What It Means to Be An Adult, through Chapter XV, The Nurse as Practical Psychologist, the stated purpose is upheld in full measure.

The reviewer would like to comment particularly on the opening chapter, which strikes him as the best introduction he has seen in any nurse's psychology text. For the early orientation of the nurse in her profession and for ideal promotion of the mental hygiene attitude, this chapter could well serve as an introductory lecture to all nurses.

Roughly, the book resolves itself into four parts, although it is not mechanically so divided. The first comprises four chapters dealing with dynamic aspects of human nature: motivation, habits, conflict, et cetera. The second, covering three chapters, is neuroanatomical in substance, outlining the reflexological backgrounds of behavior, the nervous system, muscles and glands. The third division describes the learning process; there are three chapters of this. The last five chapters concern feeling and emotion, the psychology of childhood, of adolescence and of the family, and the aforementioned delineation of the nurse's mission as a practical psychologist.

On the surface, this would appear to be no more than the conventional presentation. The material offered and the manner in which it is written, however, take this particular work out of the category of the dry-as-dust psychology textbook. The authors' style is admirable in its clarity and in its general avoidance of issues that would only cloud the understanding of the student. Despite differences that arose in the reviewer's mind over doctrinary matters, the feeling was keen that here was a text in which a suitable compromise had been achieved, perhaps the best for this purpose, and at this time. Indeed the approach is on the whole so unprejudiced that even the statement found on page 337, which follows, did not grate too harshly:

Other Emotional States—Fear and rage are the two emotions that have been most systematically studied by orthodox psychologists: leftist psychologists of the Freudian persuasion have investigated the sex emotions extensively.

The writers might have included, among the emotions that bear investigation, the tendency among "orthodox" psychologists to refer to psychoanalysis as "leftist"—an emotionally-loaded adjective if there ever was

one! On the previous page, they say, "Extreme Freudians would have us believe that love and sex are the same thing" . . . "It is extremely doubtful whether there is in the infant any actual *sex emotion*" (their italics). Perhaps we should forgive this strict adherence to emotional dichotomies and hope that a future edition will either offer an accurate statement of the Freudian viewpoint, or eliminate any discussion of it.

From the physical standpoint and that of utility, this book is highly acceptable. Each chapter is appended with Thought Problems for the Student and Specific Problems in Application. They are pretty stiff tasks for the busy nurse, but the accomplishment of a few of the more illustrative ones should aid her in professional adjustment as well as in the general understanding of human nature.

**The Public Assistance Worker.** By RUSSELL H. KURTZ, Ed. Russell Sage Foundation, New York, 1938. 224 pages. Price \$1.00

In the changing scene of social endeavor today, this book comes as a valuable aid in orientation not only to public assistance workers but to all citizens. It is a symposium consisting of six chapters and present-day ideals in social work is the theme.

Prof. Dunham of the Institute of Public and Social Administration, University of Michigan, begins with a concise and lucid history of the development of public assistance in this country. He describes aspects of relief-giving throughout four periods: from early colonial days until 1909 when public aid in America was in its infancy; for the next 20 years when category relief came to the forefront; during the depression years 1929-1936 when emergency relief policies were formulated; and finally the contemporary period with the inception of social security programs. The philosophy underlying different relief measures is given and Prof. Dunham points out that the almshouse, which played an important role in earlier programs for the care of the needy, has served its purpose.

The second chapter by Donald S. Howard, research assistant, C. O. S., Russell Sage Foundation, explains the framework upon which relief-giving is administered and shows that there are wide variations in public assistance programs and standards of eligibility. The public assistance worker's decision is governed by State and Federal laws related to relief-giving which are affected by administrative regulations enacted by local county and city councils, public welfare boards and also rules within the agencies themselves.

Margaret E. Rich, Family Welfare Association of America, who contributed Chapter III, stresses individualization in social treatment and dis-



cusses case work skills and objectives. She cites the Children's Charter as set forth in 1930 at the White House Conference and points out that an "orderly house, good discipline and adequate diet do not constitute the whole of a proper environment for a child's development."

Chapter IV deals with "Problems of Health and Medical Care" and is written by Dora Goldstine, School of Social Service Administration, Chicago. She emphasizes provision for health since "the individual's fullest capacity for self-maintenance can be developed only if he is physically and mentally sound." She also shows that the services of public assistance and health programs have both the well-being of the individual as the ultimate aim which makes the sharing of resources "logical and economical."

The topic in Chapter V is "Tying in with the Community" by Gertrude Vaile, University of Minnesota. Vaile emphasizes cooperation in the community and the use of community resources. She distinguishes between urban and rural communities and shows that although there may be few specialized resources in a rural community, there may be rich personal resources which, however, may lead to harmful situations. She believes that "the local community needs the active concern and direction of the State" and that state and local cooperation is the only solution.

In the final chapter, the editor, Russell H. Kurtz, Russell Sage Foundation, encourages public assistance workers in efforts toward the full development of talents and skill on "behalf of the people they serve" and he also gives constructive hints about ways in which this may be accomplished.

**Play and Mental Health.** Principles and practice for teachers. By JOHN EISELE DAVIS. A. S. Barnes and Company, New York. 202 pages, including index. Price \$2.50.

The author's main objective is clearly stated in the introduction to this enlightening work. He says, "I am attempting here to present the subject of play as usable material for the organization of effective mental hygiene practises in school and to this end to develop a psychology of play in line with the spirit and the recent advances of psychiatric practises in child education." Davis then proceeds upon a searching inquiry into the backgrounds of the play experience, making frequent and timely reference to the writings of others, but for the greater part injecting the products of his long experience in the management of play programs for the mentally ill.

In a criticism of the more formal play programs, we read that the child resents the attempt to make him conform and "casts about longingly for an expansive rather than a restrictive temper of teaching." In a positive way the child seeks a "sympathetic medium . . . a dynamic experience with

the characteristic of modifiability." If, as in the opinion of the author, "the personality of the child is most definitely illustrated in its play reactions," would it not be well for physical training teachers and athletic directors to pause and consider that physical training must bear the burden of promoting mental hygiene every bit as much as the classroom or the home?

A far-reaching factor, however, inhibits the development of this writer's theme. In the American philosophy of living, "play" has come to be regarded as almost synonymous with "struggle." "Conquest," "the score," "superiority," are emphasized; the utilitarian excuse for this is that the child must "be prepared for life's battles." Unfortunately for many children, however, the preparation itself is all too realistically a battle, and the individual frequently emerges upon the fields of adolescence and adulthood already badly wounded, or undermined by an unwarranted confidence in his invincibility. Davis cites Bertrand Russell: "... the cult of efficiency has inhibited capacity for lightheartedness in play."

Concerning the broader implications of his material, the author closes his chapter on Play and Psychic Adjustment with the following statement:

Hygienically administered play may bring constructive peacefulness after which comes orderliness and a reduction in the acts of destructiveness as the problem is resolved. The far and deep ramifications of play activities educationally conceived and presented may find a most important role in this field of psychic adjustment.

And by this we take it that Davis suggests a higher development of the socialization techniques that await adaptation in the play experience, to be accompanied by a lessening of the individualistic elements. Accordingly, the child who could not hope for physical ascendancy in a group, would at least be permitted to experience some degree of accomplishment. As well, the "hero" of the playground would be made aware of his inferiority in some spheres of cooperative play and would not grow early into a prototype of the "All-American" of adolescence.

It is somewhat unfortunate that Davis has not arranged his material more systematically; it appears scattered and falls into a certain degree of reproduction. In the main, however, one can follow the theme fairly closely.

If a suggestion is allowed, the reviewer might ask that a future printing be more intensively edited. There are monstrosities of grammar, punctuation and rhetoric which at times render the text extremely difficult of comprehension. Also, we feel it our duty to point out to Davis that the author of "Emotional Problems in Children" (reference given by him at the bot-

tom of page 160) is J. Louise (not "Louis") Despert. We fear that the same must be said of Karen ("Karin") Stephen. There is also a confusing manipulation of quotation marks.

The above are only mechanical suggestions, offered in a friendly manner, and are not to be construed to detract from the inherent value of the book. *Play and Mental Health*, written from experience, carries a message that transcends the boundaries of physical education among the psychotic and psychoneurotic. It should be widely read.

## NOTES

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The professional school of the New York Psychoanalytic Institute has announced its courses for the academic year 1938-1939. These courses are divided into two sections, namely, theoretical instruction and clinical conferences. The address of the institute is 324 West 86th Street, New York City.

—Among the appointees to fellowships in psychiatry through the National Committee for Mental Hygiene, is Dr. Grace E. McLean, member of the staff of the Pilgrim State Hospital. Dr. McLean will be affiliated during the fellowship with the Cleveland Child Guidance Clinic.

—The PSYCHIATRIC QUARTERLY notes with pleasure the recent celebration by the Training School at Vineland, N. J., of its fiftieth anniversary. Early recognized as a center for research on mentally deficient children, the Training School has of late been deeply interested in special studies of birth injuries.

—Invitations have been issued from the department of public welfare of Rhode Island and the superintendent of the State Hospital for Mental Diseases, at Howard, R. I., to the dedication exercises of the new psychiatric clinic building at the hospital. These exercises, scheduled for 10 o'clock Tuesday morning, October 18, will be presided over by Mr. Edward P. Reidy, director of the department of public welfare. Governor Robert E. Quinn will make the presentation speech and Dr. Jerome J. McCaffery will make the acceptance. Dr. John E. Donley, former director of the department, will address the assembly, and will be followed by Dr. Adolf Meyer, in whose honor the building will be named.





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